

THE IRON AGE

THURSDAY, AUGUST 27, 1891.

Threading and Slotting Machine for Guns of 8 to 12 Inch Caliber.

It is well known that the breech block of a gun must fit the place provided for it in the breech with the greatest accuracy. In the guns now being built for the United States army and navy the breech block is formed with an interrupted thread to fit with a similar thread in the breech. It is of the utmost importance that the block should move freely to its seat and at the same time close the breech perfectly tight. Serious difficulties in the binding or sticking of the block would arise if the gas generated by the explosive should find a passage through the joint.

ARRANGEMENT FOR THREADING THE BREECH.

The gun is supported in two rests, one at the chase and the other at the breech; both are bolted to the bed.

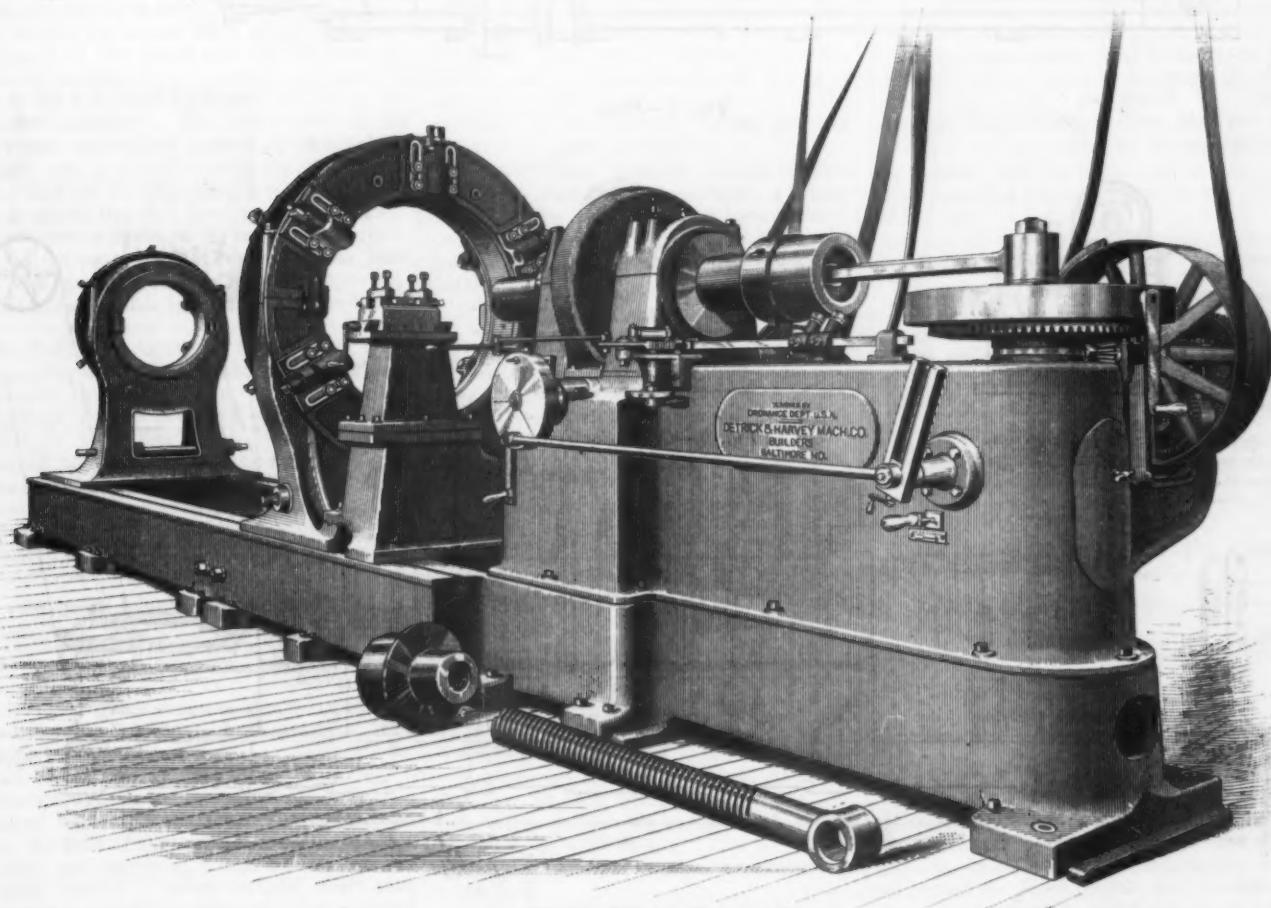
A former screw, of the same pitch as the thread to be cut in the breech of the gun, is then attached to the tool bar that carries the threading tool, causing the latter to be fed forward, while it receives rotation from the threading counter, three different speeds being provided for.

The length of travel of the threading bar is automatically governed by tappet and dogs, previously set by the operator; the gun, of course, remains stationary during the entire operation.

outer end of the arbor which carries the breech block, that is secured to the tool bar of the machine. A slide formed on the breech rest carries a shoe to which a threading tool is attached, the latter to be fed up to its work in much the same manner as is the case in an ordinary lathe; the block, itself rotating, is fed forward at the rate of the required pitch, in unison with the motions imparted to the tool bar, and in precisely the same manner as was the case when the machine was rigged up for threading the breech in the gun.

ARRANGEMENT FOR SLOTTING THE BLOCK.

The threading tool carried by the slide on the breech rest is replaced by one suitable for slotting, and the block fed past it



THREADING AND SLOTTING MACHINE FOR GUNS OF 8 TO 12 INCH CALIBER.

The threading and slotting machine for guns of from 8 to 12 inches diameter of bore, of which we present engravings, is intended for cutting the screw threads in the breech and breech block, and for forming the interruptions in the threads. Three of these machines have been built by the Detrick & Harvey Machine Company of Baltimore, Md., for the gun factory of the Watervliet Arsenal. They were designed by Anton Victorin.

The main characteristic of this machine is in the employment of the same master screw for cutting the screws of both breech and block. This practically eliminates any error which may occur by wear of the master screw, and insures the close fitting of the block and breech threads. From the official specifications we take the following general description of the machine:

ARRANGEMENT FOR SLOTTING THE BREECH.

The guide screw is replaced by a rod connecting the tool bar previously used to carry the threading tool, but now provided with a slotting tool, to a crank disc at such a distance from the center of the latter as is necessary for the required stroke; the mechanism conveying continuous rotating motion to the tool bar from the threading counter is thrown out of operation, while the slotting counter imparts rotation to the crank disk. An adjustable intermittent feed rotation is given the tool bar, speed of stroke is constant, and same for cut and return.

ARRANGEMENT FOR THREADING BREECH BLOCKS.

A steady ring is centrally secured in the breech rest, providing a support for the

and intermittently rotated for the feed, receiving these motions in the way described in using the machine for slotting the breech.

THE BED AND SUPPORTS.

The bed is composed of two sections having T-slots extending to the forward end of the housing. The second section carries the threading and slotting housing, and conforms in shape to the base of the latter. Both sections have horizontal transverse openings in their planed joint faces, into which keys for preserving their alignment are fitted; they are drawn together by means of heavy links and wedges terminating in screw ends passing through the side of the beds and provided with nuts allowing ready access. Transoms or girts connect the shears at intervals of about 7 feet and project a short distance from the sides of the bed for the reception of 14-

inch anchor bolts and 1-inch leveling screws. Bolted to the top of each foundation pier is a cast-iron plate on which the transom rests directly and to which it is bolted.

THREADING AND SLOTTING DRIVING MECHANISM.

The largest portion of the mechanism connected with the threading and slotting operations is contained in a single housing or frame mounted at the head end of the bed. A horizontal transverse shaft mounted near the working end of the housing carries a three-step friction cone and a single pulley on opposite sides of the usual spool

turned to a position in which the slot across the face points away from the tool, the stud in the slot being carried to such position as required by the starting point of the thread in the gun or on the breech block, the disk meanwhile being securely locked to the housing of the machine. The former screw passes through former nut secured to the rear end of the tool bar by keys passing through both and at each side, and held by nuts at their ends. A former screw and nut must be provided for each of the three pitches to be cut. They must be very accurately made and have a closely and uniform working fit throughout.

each side of the former nut, are struck by a collar provided on the nut for the purpose, disengaging the frictions at the completion of each stroke. To slot the breech, the threading tool is taken off its spindle and replaced by one suitable for slotting. The spool setting out the friction is brought to the central or non-operative position, leaving the worm shaft free to receive intermittent rotation for feed. At the rear end of the housing a horizontal shaft is journaled, carrying a tight and loose pulley, which are driven from an overhead counter; this shaft carries a bevel pinion that drives a bevel gear formed on the under side of a horizontal

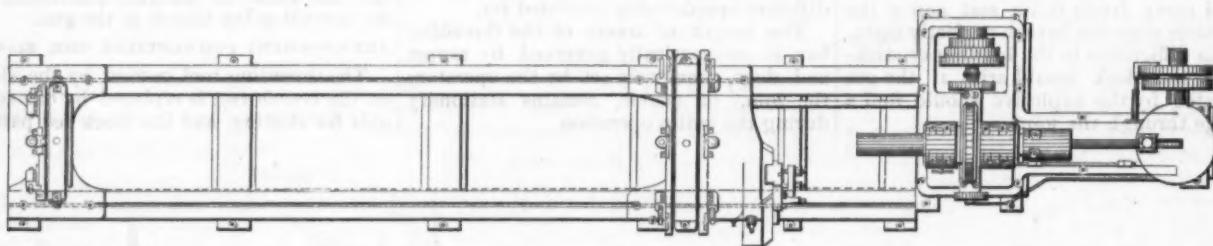


Fig. 2.—Plan.

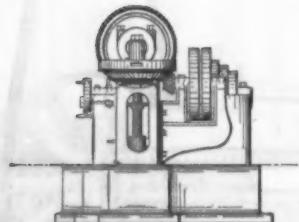


Fig. 4.—End Elevation.

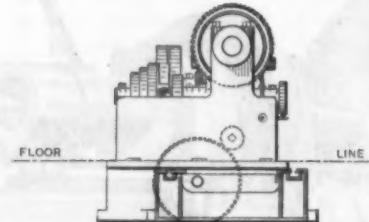


Fig. 5.—Cross Section.

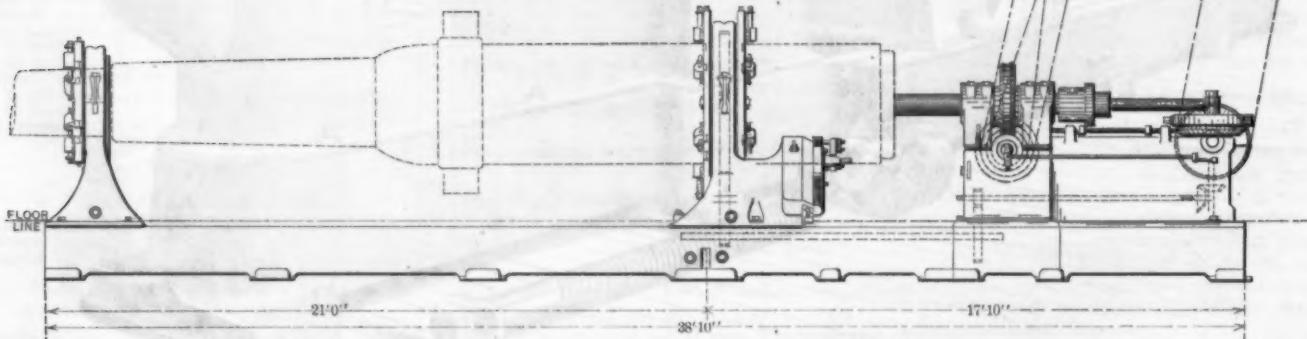


Fig. 3.—Front Side Elevation.

THREADING AND SLOTTING MACHINE FOR GUNS OF 8 TO 12 INCH CALIBER.

employed for engaging one or the other of the rim frictions of approved design, coupling them to the shaft. A worm on this shaft is in engagement with a worm gear mounted on and splined to the hollow steel tool bar, which is free to slide through it. The front end of this bar has a taper socket for the reception of the shank of the arbor, supported at its outer end in a steady ring set into the bore of the gun.

A former screw, having the same lead as the thread to be cut, is fastened in a stud, sliding in a slot extending half way across the face of a horizontal disk, mounted on a vertical shaft journaled in the rear end of the housing; the stud and disk serve in this case merely to hold and adjust the end of the guide screw, being actively employed only in the slotting operations. As used at present, the disk is

Former screws and nuts must be provided for pitches of 0.70, 0.96 and 1.17 inches. A vertical lever projects out of the top of the housing near the left-hand front corner, within convenient reach of the operator normally stationed there; this lever is pivoted, and is connected at its lower extremity by means of a rod to a horizontal bell crank, transferring motion to a vertical lever pivoted near the base of the housing, directly underneath the center of the spool employed to set the friction in the driving cone for cutting or pulley for reversing. Attached to the first arm of the bell crank is a shifter rod that passes along the top of the housing in front of and parallel to the former screw, sliding through bearings formed on the upper surface of the housing; dogs that can be set on this rod at points required by the stroke, one on

disk, which is in turn mounted on the upper end of a vertical shaft journaled in the housing; this disk is slotted from the center to the periphery, and a stud set to any position from the center by means of a screw terminating in a squared end projecting from the periphery, and this stud is pivoted to the rear end of a rod connecting the crank disk and tool bar. The forward end of this rod is free to swivel on a pin secured in a short trunk bearing that rests against a bronze ring interposed between it and the rear end of the tool bar, while the rear flange of an external bushing keeps this trunk up to the bar on the return stroke; the connecting rod takes the place of the former screw, and the external bushing that of the former nut used in threading, the bushing being secured to the bar in the same manner and by the same keys employed with the

former nut. A disk having a cam slot in its upper face is keyed to the vertical crank-shaft, and the cam slot engaged by a roll on one leg of a bell crank, which gives one pull for every stroke of the bar to a feed rod extending along the front side of the housing, and connected at its forward end to a nut set in any desired position on the face of a slotted disk by means of a screw terminating in a knurled handle; this disk is loosely mounted on the front end of the worm shaft, and is given partial revolution for the feed through the medium of right and left pawl in the disk, that can be thrown into engagement with the double-acting ratchet keyed to the end of the worm shaft. To prevent possible interference of this feed with the worm shaft when the latter is continuously rotated in threading (by accidental engagement of ratchet and pawl), the feed nut should be carried to the center. The lever for shifting the slotting belt projects from the front side of the housing conveniently for the operator, and is fastened to a rock shaft extending back in the housing, and terminating in a lever engaging the belt shipper rod by a fork. The shipping lever is locked by means of a knurled handle located at the front end of the housing, which engages by a screw a yoke passing over the lever and holding the same in the desired position. The lower end of the vertical crank-shaft is stepped on a pair of disks, one steel and one bronze, resting on the end of an adjusting screw. A miter gear above the step bearing on the crank-shaft drives through its mate a longitudinal horizontal shaft journaled in the base of the housing and extending forward. The miter on this last shaft is keyed, but free to slide out of mesh with its mate, this being accomplished by a forked lever engaging a groove in the hub of the wheel, pivoted in the housing, and extending through it; an ordinary spoon and pin latch is made use of to lock this lever. Keyed to the front of the shaft is a spur gear engaging another keyed to a horizontal shaft journaled in the bed, along a spline on which a spur gear conveying motion to one journaled in the base of the breech rest is free to move with the latter.

THE BREECH REST, WITH TOOL SLIDE.

The breech rest consists of a housing in two parts, base and top, and the shank ring; also made in two parts for convenience in placing or removing the gun. It is bolted to T-slots in the bed by 1½-inch bolts in the desired position, and can be moved along by hand by applying a ratchet wrench to the squared end of a short, horizontal transverse shaft journaled in the base of the rest and terminating in a miter gear engaging a similar gear at the upper end of a short vertical shaft that carries a pinion engaging a rack secured to the front shear and extending the entire length of the bed traversed by the back rests. The upper part of the housing is bolted to the base by means of two 1½-inch eye bolts hinged in the latter. The chuck ring is made in halves that are bolted together by four eye bolts, all hinged in the lower half. The ring is flanged on both sides, and the portion between the flanges turned to journal in the housing, a segmental gear being bolted to its central part, which is engaged by the pinion journaled in the base, thus allowing the chuck to be rotated by power or hand, as may be desired. If power is to be employed, it is derived from the pulleys driving the slotting mechanism, in which case the crank end of the connecting rod must be set over the center of the crank disk; if the ring is to be rotated by hand, a wrench is applied to the squared end of the horizontal shaft, journaled in the housing containing the slotting and threading mechanism. Slides in the ring flanges are provided, six in each flange, to which the jaws are fitted and adjusted by square-

ended screws, 1½ inches diameter, journaled at the periphery of the flanges and engaging half nuts in the jaws, which latter are firmly bolted to the ring by four 1½-inch studs for each jaw, set into the ring, and passing through slots at the sides of the jaws. Each jaw carries a 2½-inch screw terminating in a squared outer end; these screws take the bite on the breech of the gun. A slide for the block threading and slotting tool is located in a housing cast on the base of the rest at the working side. The tool is laid in a shallow 2½-inch wide slot in the surface of the bar and secured in the usual manner by two clamp bars and four 1½-inch studs. When not in use for threading and slotting blocks, the tool bar is carried back far enough to clear the breech of the gun.

THE MUZZLE REST.

The muzzle rest is mounted on the rear portion of the bed and bolted to the T-slots in the shears by 1½ inch bolts. It is moved along the bed by pinion engaging the rack in the same manner as the breech rest, the transverse shaft driving the pinion extending entirely through the base and terminating in a square at each end. It is otherwise constructed similarly to the breech rest, but provided with six jaws only, all located on the same flange of the jaw ring; the mechanism rotating the ring by hand or power is omitted.

The threading counter carries a cone similar to that on the machine, a return driving pulley, and tight and loose pulleys for open and cross belt driven from the line shaft, and convenient mechanism for shifting the belt.

THE SLOTTING COUNTER.

The slotting counter has a pulley for the belt leading to the machine, and tight and loose pulleys driven from the line shaft, with convenient mechanism for shifting the belt.

THE GENERAL DIMENSIONS ARE:

Maximum travel of tool bar threading, 25 inches.

Threading counter, R. P. M., 320.

Threading cone, 18, 22 and 26 inches diameter, 3-inch belt.

Threading return pulley, 18 inches, 3 inch belt.

Slotting bar, maximum travel, 25 inches.

Rate of bar, maximum travel, 16 F. P. M.

Slotting counter, 128 R. P. M.

Slotting pulleys on machine, 40 inches diameter, 4½ inch belt.

Slotting pulleys on counter, 15 inches diameter, 4½ inch belt.

Slotting feed per stroke, maximum, = 0.135 inch.

Slotting feed per stroke, minimum, 0.007 inch.

Vertical height from top of shears to center, 48 inches.

Capacity of breech rest, 30 to 48 inches diameter.

Capacity of muzzle rest, 12 to 26.5 inches.

Length of bed, 38 feet 10 inches.

Depth of bed, 20 inches.

Diameter of tool bar, 8.5 inches.

Diameter of former screws, 5 inches.

Pitches of former screws, 0.70, 0.96 and 1.17 inches.

Diameter of arbor passing through steady ring, 2.5 inches.

Slotting connecting rod of elliptical cross section, maximum and minimum axis, respectively, 4 and 2 inches.

The Scovill Mfg. Company of Waterbury, Conn., have lately sold to the Yale & Towne Mfg. Company of Stamford, Conn., 1000 pounds of sheet aluminum for use in connection with their artistic metal work for interior decoration.

Breaking the Ocean Record.

Not for 40 years past—at no time since the Collins steamers Pacific and Baltic wrested the palm from the Cunard Line by crossing the Atlantic in less than ten days—has a more general interest been felt in the achievements of steamship navigation than that expressed over the triumph of the White Star steamer Teutonic when she completed the trip from Queenstown in 5 days, 16 hours and 31 minutes, arriving at New York on the 19th inst. The feat was in all respects unparalleled and beyond dispute. Not only had she surpassed the City of Paris, upon which large sums had been expended to insure her success, but her own consort, the Majestic, whose time was 5 days, 18 hours and 8 minutes, was permitted to enjoy her supremacy only a single fortnight. To gain her special distinction, she made the fastest trip, made the fastest average for the entire course and traversed the greatest distance in a single day—viz., 517 miles. But the cost in fuel, according to trustworthy information, was not under 300 tons a day, the screws making from 78 to 80 revolutions a minute. The indicated horse-power was from 15,000 to 20,000, with an average pressure of 180 pounds per inch, as stated by Chief Engineer Hugh Currie. The Majestic in her crack voyage averaged 78 revolutions per minute, and she developed an average horse-power of 19,500. Here is the Teutonic's log:

August 12, Liverpool at 11.10 a.m., received the mails; 3.20 p.m., Roche Lighthouse abeam.

August 13, at 4.52 a.m., arrived at Queenstown; 1.45 p.m. received the mails; 1.48 p.m., left Queenstown; 2.05 p.m., Daunt's Rock Lightship abeam.

August 14, 400 knots, strong westerly breeze.

August 15, 496 knots, fresh westerly breeze.

August 16, 505 knots, moderate northerly winds.

August 17, 510 knots, light variable winds.

August 18, 517 knots, light variable winds.

To Sandy Hook, 290 knots, 19th, at 1.36 a.m., Sandy Hook Lightship abeam. Distance, 2778 knots.

These statistics show how the record has been lowered since 1851:

Between Liverpool and New York.

Year.	Steamship.	Days.	Hours.	Minutes.
1851	Africa	10	6	..
1851	Asia	10	2	..
1851	Pacific	9	19	25
1851	Baltic	9	13	42
1856	Persia	9	1	45
1866	Scotia	8	17	47

In the latter part of 1866 the transatlantic steamers began to call at Queenstown for the mails. Since that year the time has been taken from the minute the vessel passed the Rock Light, just outside of Queenstown Harbor, until she reached the Sandy Hook Lightship.

The records from that year on were:

Year.	Steamship.	Days.	Hours.	Minutes.
1866	Scotia	8	2	48
1873	Baltic	7	20	9
1875	City of Berlin	7	15	48
1876	Germanic	7	11	37
1877	Britannic	7	10	35
1880	Arizona	7	7	23
1882	Alaska	6	18	37
1884	Oregon	6	11	9
1884	America	6	10	..
1885	Etruria	6	5	31
1887	Umbria	6	4	49
1888	Etruria	6	1	55
1889	City of Paris	5	19	18
1891	Majestic	5	18	8
1891	Teutonic	5	16	31

The Teutonic was built in Belfast, Ireland, and was completed in 1889. She is 582 feet long, 57½ feet wide and 39 feet 4 inches deep. Two triple-expansion engines, driving twin screws, furnish the power. The German steamers have lately been doing some splendid work, and it will be strange if they are long content with the odds so much against them.

Taylor Iron and Steel Company.

The old and well-known corporation, the Taylor Iron Works, at High Bridge, N. J., were dissolved on Monday, August 10. According to announcement, the stockholders met and placed the entire property and plant in the hands of Geo. Richards of Dover and Wm. W. Marsh of Schooley's Mountain, as trustees in liquidation, who sold and delivered it on the same day to the Taylor Iron and Steel Company, or-

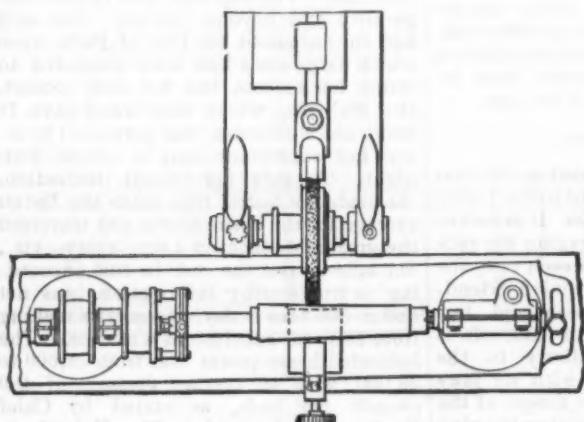


Fig. 1.—Taper Grinding.

ganized for the purpose of purchasing and succeeding to the business of the Taylor Iron Works.

The new company have an authorized capital of \$1,000,000. The directors are Lewis H. Taylor of High Bridge, Luthur Voorhees of New York, Jas. Moore of Elizabeth, Henry M. Howe of Boston, Robert E. Jennings of Jersey City and Wm. J. Taylor of Chester.

The officers immediately elected by the new company are: President, Lewis H. Taylor; vice-president, Robert E. Jennings; general manager, W. J. Taylor; secretary and treasurer, T. F. Budlong.

Thus another of the old-time iron concerns has fallen in line to take up steel in order to keep up with the improvements of the times. In this case this action seems to be particularly propitious, as the Taylor Iron and Steel Company are the owners of the Hadfield system of steel making, so long and successfully practiced at the Hecla Works in Sheffield, England. The Hadfield ranks among the most successful steel foundries in the world, and has many specialties, among which are the solid steel car wheels. All their 20 years' experience has been purchased by the Taylor Iron and Steel Company, who will be planted at High Bridge. Already several wheels made by the Hadfield Works have been sent to the Taylor Works.

The Atlantic Trust Company of New York and George H. Prentiss & Co. of New York and Brooklyn offer for subscription, at par, \$750,000 8 per cent. cumulative preferred stock of the Colorado Fuel Company, full paid and non-assessable, par value of shares \$100 each. The company own in fee simple 21,000 acres of coal lands in Huerfano, Las Animas, Gunnison, Pitkin and Garfield counties, Colorado, and are now operating six full equipped mines, capable of an output of 6100 tons per day. The company control and operate the only anthracite coal mines west of Pennsylvania and have also bituminous coal suitable for coking and all other purposes. The market for this product embraces the whole area from Montana on the north, the Missouri River on the east, Mexico on the south to the Pacific Ocean; all of which is brought within commercial reach by 28 great railway systems. The

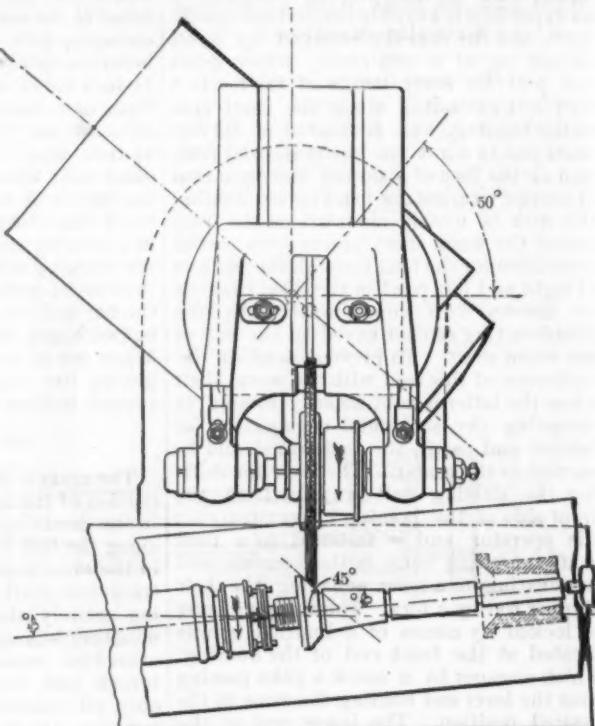


Fig. 3.—Grinding Two Tapers with One Setting.

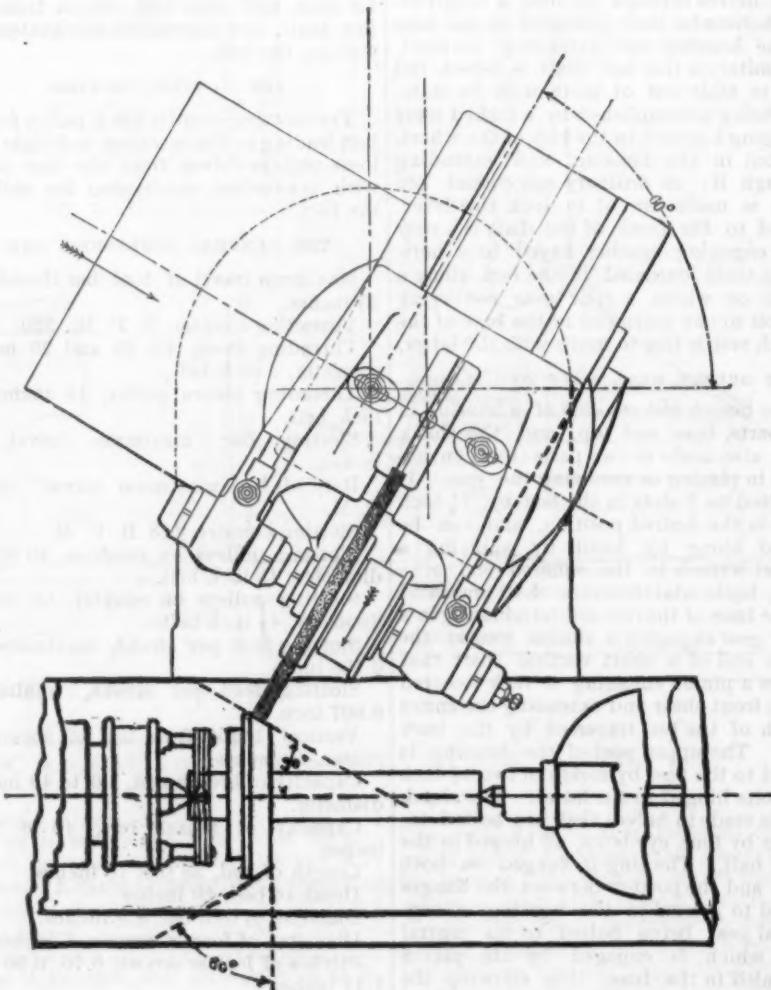


Fig. 2.—Grinding Abrupt Taper.

UNIVERSAL GRINDING MACHINE WORK.

company's mines were opened three years ago, since which time the net earnings have been for years to June 30, 1889, \$230,678; 1890, \$305,916; 1891, \$330,938. In July, 1891, the net earnings increased 25

per cent. over July, 1890. The net earnings of the company, after deducting the bond interest, were in 1891 more than double the sum necessary to pay the 8 per cent. dividend on the preferred stock.

What Can Be Done With a Universal Grinding Machine.

(Continued from page 252.)

The first article described the emery wheel and the kinds best adapted for doing work of a certain character. The following shows what can be done with universal grinding machines; it is from a

the wheel and the pressure on the rest may be increased as the work approaches to a perfectly cylindrical form. In other words, when work is first commenced on a piece the back rest should be considered more as an absorbent of the vibration than as a support. After the work has become quite round the rest can be used to regulate the size at different points. This method of using the rest is advantageous

cated by the arrow, and the face of the wheel is thus brought parallel with the line of the desired taper. The work is revolved by the dead-center pulley, as shown in cut, and the wheel is moved over the surface of the work by the cross feed. The method of grinding two tapers with one setting of the machine, when one of the tapers is not more than 10°, is shown in Fig. 3.

Fig. 4 shows a method of squaring the end of steel bushings. The wheel is turned away on the side, leaving a narrow cutting corner, and should be very soft. If the axis of the arbor and the axis of the wheel spindle are exactly parallel, the surface will be perfectly flat and at right angles with the axes. A concave or convex surface can be obtained by varying the relation of the axes.

Fig. 5 shows the method of grinding the sides of collars, washers, milling cutters, &c. The plate or disk shown is held in the chuck, and the head stock is turned at right angles to the sliding table. The wheel is brought against the work by the cross feed and the automatic table feed can be used for passing the work in front of the wheel. It is evident that the surfaces ground in

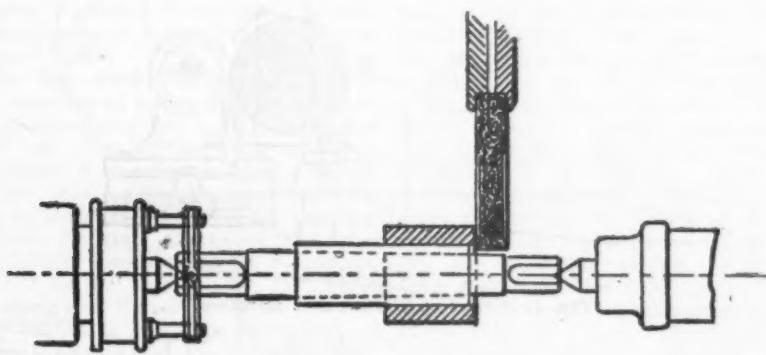


Fig. 4.—Squaring Ends of Bushings.

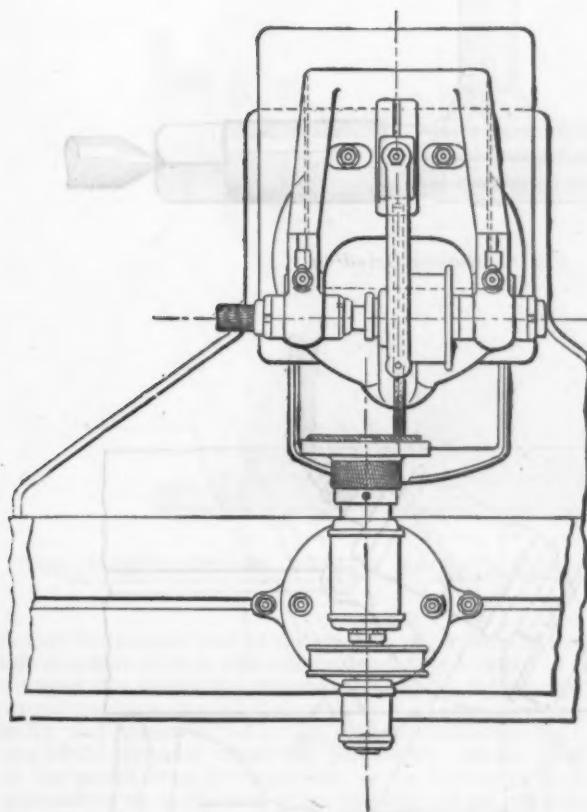


Fig. 5.—Grinding Collars, &c.

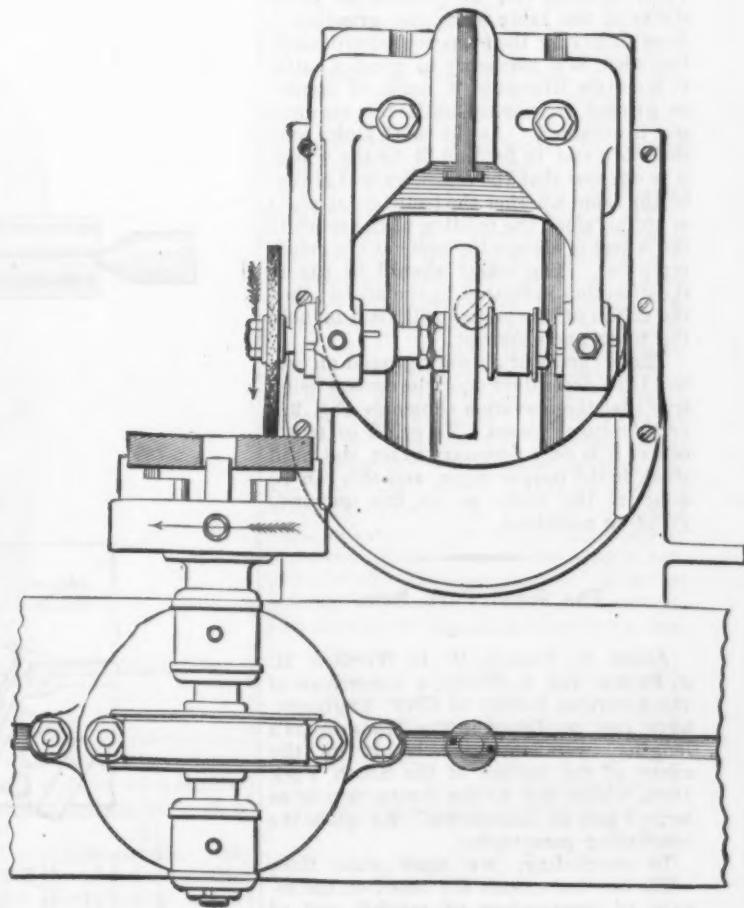


Fig. 6.—Grinding Collars—Another Method.

UNIVERSAL GRINDING MACHINE WORK.

work on the subject by the Brown & Sharpe Mfg. Company.

Fig. 1 shows how taper grinding is done on the No. 1 grinding machine, and shows the use of the back rest, which is fastened to the table by means of a special block and travels with the work. The back rest is used to absorb vibration caused by the emery wheel in slender pieces, and should be so placed that only the high points of the work will touch as the work is revolved. When it is thus placed and a light cut is taken by the wheel the back rest assists in the production of round or approximately round work, and the cut of

in grinding pieces that are apt to be large midway from the ends. Slender work, until it becomes approximately cylindrical, as a rule, requires a very coarse feed when the back rest is used.

When an abrupt taper similar to that shown in Fig. 2 is to be ground, the swivel table remains parallel to the ways of the bed, as in plain grinding, but the wheel bed is set to the angle which brings the line of motion of the wheel slide, when operated by the cross feed, parallel with the taper to be obtained. The wheel platen is set at right angles with the line of movement of the wheel slide, indi-

this manner may be plain, concave or convex, according to the setting of the head stock. Two surfaces may be ground on pieces held in the head stock with only one setting of the machine. For example, if the portion of the work ground in Fig. 2 were detached from the shaft or arbor and it were desired to grind the flat and bevel surfaces, the head stock would be turned at right angles to the table, as in Fig. 5, and the wheel bed would be set to such an angle that the line of motion would be parallel with the taper.

Another method of grinding collars, &c., is illustrated in Fig. 6. Here the

piece is ground by a small wheel on the end of the spindle.

When used for grinding cutters or reamers the machine is provided with a tooth rest, which is bolted to the wheel platen at one of its T-slots, as shown in Fig. 7. The ordinary place for the tooth rest when in use is directly in front of the wheel, the cutter being held on a mandrel. To get the necessary amount of clearance or backing off to the tooth the end of the rest which supports the tooth must be set a little lower than the center of the wheel, so that the ground surface will have the proper clearance angle. For this kind of work the wheel must, of course, be small enough to clear the tooth next above the one being ground. Fig. 8 is a top view, showing a reamer on centers. The machine is operated by grasping with one hand the shank of the reamer, or the mandrel, as the case may be, and holding the tooth firmly upon the tooth rest, while the other hand is engaged in feeding the reamer or cutter across the face of the wheel with the crank wrench or hand wheel.

When a tooth has been run by the wheel and off the tooth rest the reamer or cutter may be turned to bring the next tooth upon the rest, and the table moved in the opposite direction while it is being ground. Thus a tooth can be ground at every stroke of the table when the grinding is done simply for the purpose of sharpening; but when it is necessary to grind a cutter to a certain diameter, it must, of course, be ground repeatedly until the required size is obtained. As the tooth slides over the tooth rest in feeding it by the wheel, it is obvious that the clearance will always be the same whether the teeth are straight or spiral, since the relation of the tooth to the wheel is always the same at the grinding point. The wheel should be run in the direction indicated by the arrow; then the action of the wheel will tend to hold the tooth upon the rest.

The accuracy of all work ground on centers is so dependent upon the centers being true that the operation shown in Fig. 9 is very frequently seen. To grind or true a center it is only necessary to set the head stock to the proper angle, and this can be done on the plain as on the universal grinding machines.

The South Fork Dam.

James B. Francis, W. E. Worthen, M. J. Becker and A. Fteley, a committee of the American Society of Civil Engineers, have just published in the *Transactions* a lengthy, well-illustrated report on the cause of the failure of the South Fork Dam, which led to the destruction of so large a part of Johnstown. We quote the concluding paragraphs:

In concluding, we must state that, while our deductions are based on the results of observations of rainfall and of flow, which are necessarily approximate, we feel satisfied that they are not far from the truth. There can be no question that such a rainfall had not taken place since the construction of the dam. But the surface of the watershed is quite steep, and the consequent rapid discharge of a large percentage of the rainfall into the reservoir would require a very large outlet to prevent a dangerous accumulation. The spillway, however, had not a sufficient discharging capacity; contrary to the original specifications of W. E. Morris, requiring a width of overflow of 150 feet and a depth of 10 feet below crest, which would have been a sufficient size for the flood in the present case, it had only an effective width of 70 feet, and a depth of about 8 feet; the accumulated water rose to such a height as to overflow the crest of the dam and caused it to collapse by washing it down from the top.

The dam itself, or the parts of it which were left standing, showed undoubtedly that it was well and thoroughly built, and that it would have successfully resisted the pressure of the water. The exposed sides of the breaks show distinctly that the compact layers of which the structure was formed were not obliterated by the wearing action of the flood, and they stand conspicuous witnesses of the value

interests are at stake, is to provide wasting channels of sufficient proportion and to build the embankment of ample height.

Clark Thurston, vice-president of the American Screw Company of Providence, R. I., is visiting Germany to find a proper location for the erection of a factory. At present the company have a small factory in

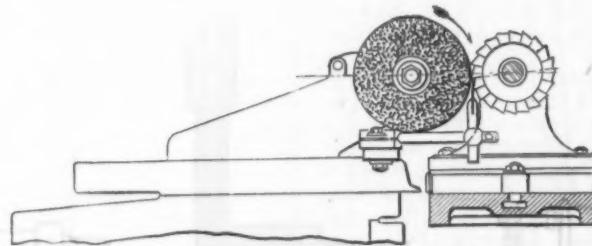


Fig. 7.—Grinding Cutters and Reamers.

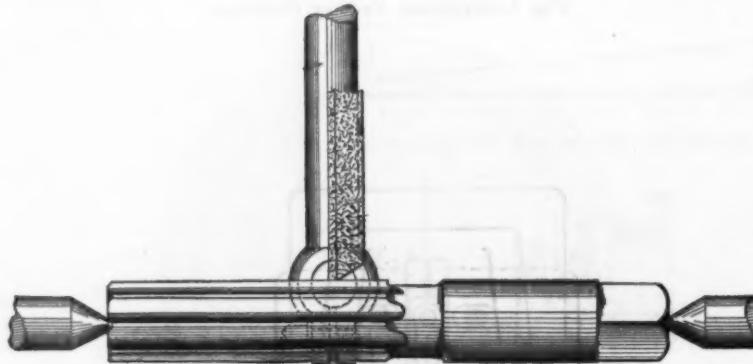


Fig. 8.—Reamer Grinding.

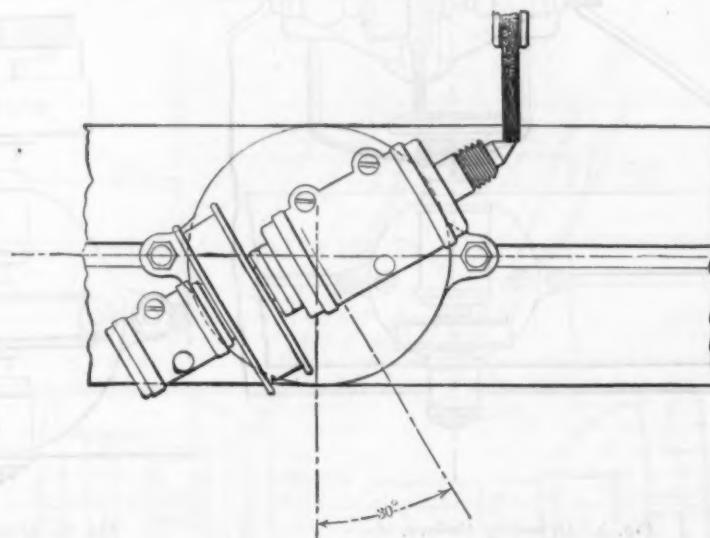


Fig. 9.—Grinding a Center.

UNIVERSAL GRINDING MACHINE WORK.

of an earth embankment, when well built of good materials, to impound large bodies of water.

There are to-day in existence many such dams which are not better, nor even as well, provided with wasting channels as was the Conemaugh Dam, and which would be destroyed if placed under similar conditions. The fate of the latter shows that, however remote the chance of an excessive flood may be, the only consistent policy, when human lives or even when large

operation in Berlin, but they intend to put up large works somewhere in the empire. Mr. Thurston says that the principal reason why his company are establishing factories in foreign countries is to protect their numerous patents.

It has been decided to issue *Stahl und Eisen*, the organ of the Verein Deutscher Eisenhuettenleute, the leading metallurgical journal of the Continent, twice a month after January 1.

The Westinghouse Rotary Engine.

In this engine the attempt is made to eliminate the excessive friction ordinarily exerted between the pistons and cylinder, and also to attain the economical results due to a very high piston speed, while maintaining the closeness of contact requisite to prevent leakage. The engine consists of a cylinder, a series of pistons mounted to rotate within the cylinder and a sleeve or bushing fitting freely between the peripheries of the pistons and the bore of the cylinder.

The characteristic defect developed in the operation of rotary engines as heretofore constructed, when a sufficient piston speed has been developed to comply in that regard with economical requirements, and that which from its universality has been considered as inherent in the type, has been the great degree of friction of the plates or blades which act as pistons, induced by the high velocity with which they move over the surface of the cylinder. In all engines in which the piston drum or carrier is rotated and the cylinder is sta-

ployment of a sleeve or bushing, A, which fits freely in the bore of the cylinder so as to be adapted to revolve therein, and which is practically maintained at an infinitesimal distance from the bore of the cylinder by a packing of steam interposed between it and the periphery of the bushing. The pistons, therefore, instead of exerting their outward pressure upon the wall of the cylinder, bear upon the inner surface of the bushing, and the centrifugal force of one piston being largely counterbalanced by that of the opposite piston, the resultant action upon the bushing is a tendency to press the latter in the direction of that portion of the bore of the cylinder which is nearly opposite the line on which the piston drum is tangential to the bushing. When the bushing rotates with substantially the same velocity as the piston drum, the sliding pistons have the effect of simply an oscillatory motion upon the inner surface of the bushing, and when the bushing rotates without material friction within the cylinder the employment of the bushing effects a reduction of the

tars weigh 690 pounds. The maximum range is 6 miles. At 5 miles they have great accuracy.

A Triumph with the Milling Machine.

At the works of the Pratt & Whitney Company, Hartford, Conn., a cut of unprecedented size was recently made by one of their regular No. 7 double-head milling machines. Both heads of this machine are provided with vertical and horizontal adjustment. The greatest height of the spindle from the table is 25 inches, the dis-

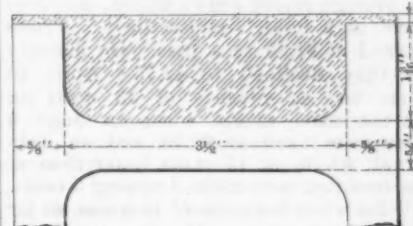
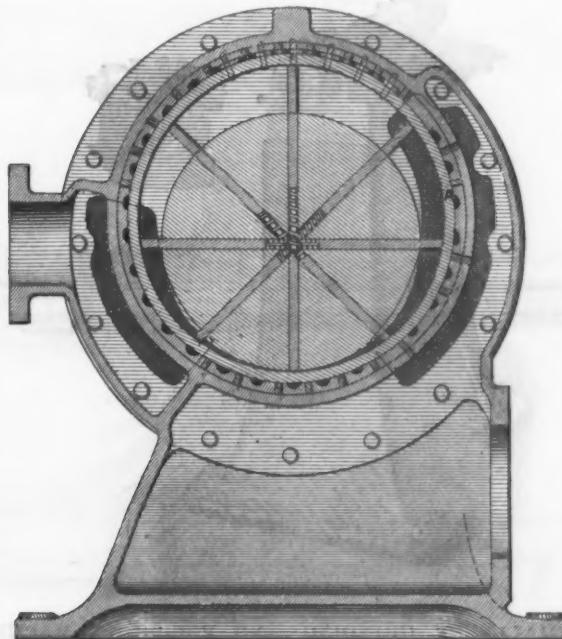


Fig. 1.



THE WESTINGHOUSE ROTARY ENGINE.—VERTICAL CROSS SECTION.

tionary the pistons tend to the creation of this excessive friction with a force dependent upon the actuating pressure and the centrifugal force due to their weight, velocity and operative radii. At that portion of the cylinder where the periphery of the piston drum is tangential, or approximately so, to the bore of the cylinder the pistons have their minimum outward pressure, while at the opposite portion of the cylinder they have an increased outward pressure dependent upon their weight, velocity, and the pressure exerted upon them. The pistons have, in effect, heretofore exerted the retarding action of brakes, and their friction upon the cylinder, if made sufficiently tight to avoid a corresponding if not greater objection in the leakage past them of unused motive fluid, has absorbed so large a percentage of the actuating power that at the present day no form of rotary engine is recorded as of general application or recognized in standard practice, and the class is usually considered impracticable, particularly where any substantial consideration is given to the economical use of steam.

This engine—the invention of George Westinghouse, Jr., of Pittsburgh, Pa.—is designed to overcome these objections, and its leading feature consists in the em-

friction of the sliding pistons to about one-twentieth of that which would be induced in the rotation of the pistons of a similar velocity over the surface of the bore of a stationary cylinder.

Steam is admitted through the pipe shown at the left to a chamber on one side of the cylinder, and after having acted upon the several blades or pistons it exhausts through ports on the opposite side of the cylinder and then passes through an exhaust pipe connected with the chamber in the base. From a separate supply nozzle steam is admitted to the packing grooves, which are shown as semicircular openings surrounding the sleeve or bushing.

There is great satisfaction in Washington over the success of the experiments with the new cast iron mortars for harbor defense. They are about 11 feet long and weigh over 14 tons. They are made from cast-iron cannon, strengthened with steel bands, shrunk on. This type of mortar can be rapidly constructed, and the recent trials show that very rapid and satisfactory progress can be made in this branch of harbor defense. They will also become available at an early day for the defense of the lake cities. The shells for these mor-

tars weigh 690 pounds. The maximum range is 6 miles. At 5 miles they have great accuracy.

Many locomotive builders make the parallel rods of their engines with an ∞ section. Heretofore the rod has been forged solid, and then the surplus metal removed by planing. This required from seven and one half to eight and one half hours. In order to ascertain if this could be done more quickly it was determined to try milling. A wrought-iron rod was sent to the Pratt & Whitney shops and put in their milling machine. The amount of metal removed at one cut is shown by the hatched portion of the accompanying sectional drawing, Fig. 1. In the groove this measured $3\frac{1}{2}$ inches wide by $1\frac{3}{16}$ inches deep, and across the top $\frac{1}{2}$ inch deep by $4\frac{1}{2}$ inches wide. This represented a section of nearly $4\frac{1}{2}$ square inches. This was done at the rate of $1\frac{1}{2}$ inches per minute. This means, to put it another way, that

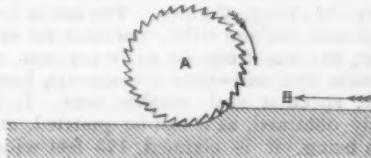


Fig. 2.

nearly 8 cubic inches of metal were cut up into chips every minute. The surface left by the cutter was very perfect.

The second drawing shows the direction in which the cutter and work moved. It will be noted that the cutter moves in a direction contrary to that of ordinary practice. It was stated by Mr. Whitney that with this machine it would have been impossible to have taken this cut with the cutter moving in the usual direction—contrary to that indicated by the arrow in the drawing. When moved as here indicated, there is less tendency of the work and cutter separating. We may add that the same machine has taken heavy cuts through cast iron at the rate of $9\frac{1}{2}$ inches per minute.

The Phosphor Bronze Smelting Company of Philadelphia, have issued a new price-list.

San Francisco News.

One of the lines of business most seriously affected by the dullness of the first half of the year has been the nail industry. The price has been declining steadily since January 1, while there remains on hand large unsold stocks. The Pacific Iron and Nail Company, despite occasional disagreements with their workmen, have been a successful and dividend-paying institution, but the past six months have given them a severe strain. During 1890 they employed 250 men, and made 340,000 kegs of nails. During the past seven months they have manufactured on an average 20,000 kegs a month, but sales have been light, comparatively. Prices opened at \$2.85 as a base. On January 20 they declined to \$2.75; April 20 there was an advance of 25 cents on all the nails except wire; on June 6 they were fixed at \$2.70, and on July 17 at \$2.70, or 15 cents lower than at the opening, wire nails dropping 5 cents. All the while the price of iron was, so far as they were concerned, at a standstill. With the general revival of business expected in the fall, there are better times in store for this industry. There is promised a very good business in almost every line for the fall, and no doubt the nail trade and the nail industry will show a conspicuous improvement.

Some time since I sent on a few particulars as to the development of the tin industry among us. It is satisfactory to be able to say that continued progress is the order of the day. None of the tin has been as yet placed on this market, and it is probable that for some time most of what is produced will find its way East to satisfy the Eastern demand in part. The last Australian steamer, the Alameda, on the 6th inst., brought 2631 ingots. The market for some time has remained unchanged at 21 $\frac{1}{2}$ cents.

There has been an advance in the tin-plate market during the past three weeks, the quotations now being \$7 to \$7.10. Imports have been very light, not exceeding 200 boxes.

There has been no improvement in the pig-iron market and demand is just as backward as ever. There is, however, a better feeling in merchant iron and hardware. A company has been incorporated for utilizing the iron resources of San Diego County. The Ord Mountain and Dry Lake mines are 16 miles east of Newberry, San Diego County. The ore is low in phosphorus and silica, contains no sulphur, but has from 68 to 70 per cent. of metallic iron and exists as magnetic, hematite, specular and spathic ores. It is easily obtained, as it can be quarried, one vein being, it is claimed, 175 feet wide. The reduction works will be at San Diego. The fuel will be petroleum, lignite and bitumen. The iron and steel are said to be of the finest quality. Merchant iron and crucible steel will be made, as also, it is said, tin plate; it will not cost any more to produce than it would at Pittsburgh. The freight from that city to California points is now \$17.50 per ton, so that there can be no competition. The enterprise will probably be in operation by September 1. It is intended to make 100 tons of blooms daily. San Diego guarantees a bonus of \$200,000 and 50 acres of land to the projectors of the enterprise. Employment will be given to 600 men. There can be made here 86,500 tons of iron and steel yearly, and it will cause quite a revolution in the iron trade of California should the anticipations of its projectors be realized.

The molders' strike in this city is entering on another phase. For the year and a half nearly during which the strike has been in operation about 13 of the foundries have been working under the union

flag. The journeymen were assessed \$3 per week for the support of the strikers. The latter also received funds from 14 members at work in the Hawaiian Islands. The fund obtained from three sources—from the Federated Trades, from the molders throughout the Union and from sympathizing unionists in other trades—at least afforded enough funds to keep the strikers who were not at work alive. But now they have more to support, as a strike has taken place at the Enterprise Foundry, the alleged cause being the refusal of one of the men employed there to contribute to the support of the strikers any longer, and the indisposition of the proprietors to take any measures to compel him to do so. This places five more men in the list of strikers. Then it is alleged that the non-union foundries have been underbidding the union foundries and taking their business away, thus inducing them to join the union, or at least to resolve to do so at the earliest opportunity. Another foundry has joined the union, another has reduced wages and still another is said to be on the eve of joining the engineers and foundry-

bureaus and departments at Washington into a marine board, which should have cognizance of all matters relating to the welfare of shipping, and authority to pass upon the affairs of the merchant marine. He also called the attention of the board to the necessity of its being properly represented at Washington either by a committee of three appointed from the lake, river and coast interests or by a permanent counsel, who could watch any hostile legislation.

Grinding and Polishing Machine.

This machine is designed for either solid emery or corundum wheels for grinding with either fixed or yielding boxes, as occasion may demand. It is especially intended for polishing with yielding boxes serving as a cushion, and which avoid jar and effect a saving in labor and wheels. The cut is smooth and does not leave the wheel marks common in polishing machines having rigid boxes.



THE CHALLENGE GRINDING AND POLISHING MACHINE.

men. A crisis is thus coming about in the affairs of the strike, and it is thought that it cannot possibly last much longer. A meeting of the Board of Manufacturers and Employers of California will be held at the Board of Trade Rooms next Tuesday, August 25, at 2 p.m., when a committee appointed for the purpose will report upon a plan of organization. Once this body gets into dead working order we will hear less of strikes than we have been doing.

The National Board of Steam Navigation closed its twentieth annual meeting, held in this city last week, by electing the following officers: President, C. W. Woolsey of New York; first vice president, B. D. Wood of New Orleans; second vice-president, F. A. Churchman of Philadelphia; treasurer, Addison Lysle of Pittsburgh; secretary, J. W. Bryant of New Orleans; assistant secretary, C. H. Boyer of New York; permanent member of the Executive Committee, A. C. Cheyney of New York. The retiring president, J. W. Miller of this city, spoke of the skill in the art of shipbuilding which American mechanics are acquiring in the execution of contracts for Government vessels. The most important subject before the Executive Committee was the question of the consolidation of the various

The large engraving is a rear view and the small one is a front view of the box broken away. Back of the boxes are four hollow bolsters, two for each box, in which are placed heavy coiled steel springs, one end resting against the upper or sliding part of the box, the other inserted in the bolster and engaging with a set screw, by which the tension is regulated, and in front (see small engraving) there is a perpendicular plate secured to a fixed part of the box, provided with a set screw to govern the forward movement. There are also set screws for locking the boxes, making them perfectly rigid if desired. It has self-oiling babbitt bearings, bearing protectors and is furnished with or without rests. The principal dimensions are: Height, 35 inches; length of spindle, 34 $\frac{1}{2}$ inches; diameter of spindle in bearings, 1 $\frac{1}{2}$ inches; diameter of spindle between flanges, 1 $\frac{1}{2}$ inches; length of bearings, 8 inches, distance between wheels, 28 inches; greatest distance for thickness of wheels, 4 inches; tight and loose (or single) pulley, 4 $\frac{1}{2}$ x 3 $\frac{1}{2}$ inches face; weight, with countershaft, about 500 pounds. This machine is made by the Appleton Mfg. Company, Philadelphia, Pa.

The Toronto meeting of the United States Association of Charcoal Iron Workers has been postponed.

The Gun Works of Krupp, Armstrong and Canet.

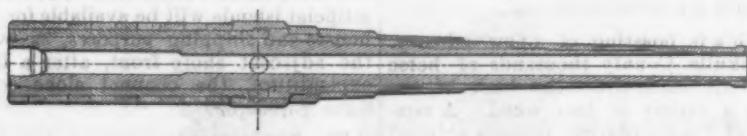
The recent bids submitted by the gun manufacturers of the United States for supplying the army with 100 modern high-power rifled breech-loading guns, call attention to the manufacture of such ordnance in foreign countries.

The largest gun works in the world are those of Krupp, at Essen, in Germany. The plant complete covers 600 acres of ground and furnishes employment for 11,000 men. Besides the factories, Herr Krupp owns several hundred iron mines in Germany and half a dozen in Bilboa, Spain, and to these iron mines should be added several coal mines. It is estimated that the daily output from these mines is 3000 tons of coal and 1500 tons of ore, and that this part of the work employs 6000 workmen. Krupp has 14 blast furnaces belonging to six smelting works. A complete railroad and steamship service forms part of the vast and complex

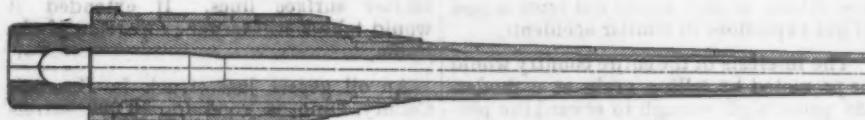
ence of Mr. Canet, whose great success has given the name of Canet to all the guns now made by him. The number of workmen he employs is about 10,000. Canet is a rival of Armstrong, though the latter may not think so, and several nations consider his guns as superior.

Russia has a large steel and gun-making plant at Aboukoff, near St. Petersburg, but there are many Krupp cannon in use in the Russian army and navy. There are many other gun factories besides those mentioned above, but their size and capacity are not to be compared with them.

A glance at the largest guns each of the above firms has turned out may be interesting. Krupp has manufactured the largest cannon in the world, 119 tons in weight. Armstrong, Mitchell & Co. follow with a gun of larger bore, but lesser weight, and Canet brings up the foot of the list with a gun of 66 tons. The three guns given in the illustration are drawn accurately to scale, so that a fair comparison can be made of their dimensions and method of construction.



Canet, 34 c. m. (13.89 Inch) Gun, 65.8 Tons.



Krupp, 40 c. m. (15.75 Inch) Gun, 119 Tons.



Armstrong (16.25 Inch) Gun, 111 Tons.

MODERN HEAVY GUNS.

system. There are also hospitals, insurance associations, villages and a complete social organization that go toward making the Krupp establishment a community all to itself. This community numbers some 25,000 workers, all more or less engaged in the production of iron and steel. The value of the plant is estimated at not far from \$50,000,000.

The second great gun-making establishment of the world is probably that of Sir W. G. Armstrong, Mitchell & Co., of Elswick, at Newcastle-on-Tyne, England. These works claim that in point of importance and extent they have no other rivals than Krupp. The firm not only make artillery, with all its accessories, but also possess excellent shipyards, from which the largest vessels can be turned out, for either the mercantile or naval marine. For all these purposes the Armstrong Company employ no less than 16,500 men.

The most important ordnance establishment in France is that of the Société des Forges et Chantiers de la Méditerranée. This corporation has three factories, one at Havre, one at Marseilles and one at La Seyne, near Toulon. That branch of the works situated at Havre is chiefly occupied with the manufacture of guns, under the superintend-

The big gun of Germany costs the sum of \$144,750. Three of them were bought by the Italians for coast defense use. England's 111-tonner is worth \$93,160. Some of them are mounted on board a couple of the new battle ships. The smaller gun—that of France—can be bought for, let us say, \$50,000. As more details of this monster ordnance may be desired the following tables are subjoined:

Gun maker.	Weight. Tons.	Diameter of bore. Inch	Powder charge. Lbs.	Projectile. Lbs.	Muzzle velocity. F. S. F. T.	Muscle energy. Inch.	Penetration in steel at the muzzle.
Armstrong.	111	16.25	960	1,800	2,148	57,580	30.8
Krupp . . .	119	15.75	727.5	2,028	1,904	45,970	27.1

To make a comparison between the guns of the three celebrated gun makers, the same size of gun must be taken—thus:

	Tons.	In.	Lbs.	Lbs.	F. S.	F. T.	Inch.
Armstrong.	67.8	13.5	630	1,250	24,225	35,540	26.6
Canet . . .	65.8	13.4	616	900	2,300	36,317	29.1

There is no Krupp gun of 18 inches to place with the other two. Krupp's 12-

inch gun is the nearest and that is too inferior to enter. The table shows the superiority of the Canet gun.

THE WEEK.

The Cunard Company have made a contract with the Fairfield Company for a steamer which will bring back to their line the blue ribbon of the Atlantic, so lately captured by the Teutonic. The new vessel will be 600 feet in length, so that she would still be longer than the White Star vessels. Her tonnage will be over 12,000 tons. The Cunard Company have gone with the times in adopting twin screws for propulsion. The speed of the new vessel is to be 22 knots, and 21 knots at sea.

A curious instance of the danger of evading the Contract Labor law is furnished by a suit that has just been begun in Bridgeport, Conn., in which it is the men who were imported in violation of the law who bring the suit. They not only object to a deduction from their wages for the purpose of repaying the passage money advanced to them, but they claim the considerable reward promised by the law to the informer.

The New York tax rate for the current year is definitely fixed by the Aldermanic Committee on Finance at 1.90 per cent., the lowest since 1862, due to the increased property valuations and the decrease in the city budget. The valuation of property for 1890 was placed at \$1,696,978,890, while for the year 1891 it was \$1,785,857,338. The budget for 1891 was \$33,160,891,220.

The regulations finally adopted for the transportation of bonded goods over Canadian railroads are a source of satisfaction on both sides of the national boundary line. The Montreal *Journal of Commerce* says: "The United States official is bound to compare the goods in each car which he seals on a foreign territory with the manifest, a copy of which is sent to the custom house at place of delivery. The manifest accompanying the car will be the basis of the entry at the frontier. No unloading will be required, unless there are signs of the consul's seal having been tampered with. There seems nothing in these regulations likely to embarrass the transcontinental and international traffic of either the States or Canada."

Improved sugar machinery is wanted by planters in Cuba on account of the scarcity of field laborers.

Large four-masted schooners at Southern ports are loading lumber for the United Kingdom and the Continent and are likely to supersede the inferior class of European vessels, which have had almost the entire business.

Sharp competition in the ocean carrying trade has reduced profits so low between New York and the Clyde that a mutual arrangement has been formed to protect the common interests.

A hurricane in the French colony of Martinique destroyed all the shipping and ruined the plantations. Many lives were lost.

Canada will export more wheat this year than ever before. The yield in Ontario will be 30,500,000 bushels, or nearly 10,000,000 more than last year. Manitoba and the Northwest will yield, it is estimated, 30,000,000, and the other provinces 2,500,000 bushels, or in all about 63,000,000 bushels. Deducting for seed and consumption 30,000,000 bushels, this will leave 33,000,000 bushels for export. Of this amount Manitoba expects to export 25,000,000 of hard wheat, the finest Can-

ada produces. Last year the total export of wheat from Canada was a little over 15,000,000 bushels. Confidence is felt in Canada that these abundant harvests, following several lean years, will have an excellent effect on business interests.

Rio papers do not hesitate to declare that the frequent changes in the Brazilian customs duties under the new Government are highly detrimental to trade. Ministers arbitrarily increase duties 25 to 50 per cent. at pleasure. After October 1 duties must be paid in gold.

The effects of the new tariff in the United States are shown in the British Board of Trade returns for July. Both imports and exports are decreased. Noticing the fact, the London *Times* says the amount of the exports probably represents a full normal month's trade on the reduced scale which now must be looked for. The value of the imports is stated to be £32,824,000, a decrease of about $\frac{1}{4}$ per cent., and that of exports £21,045,000, a decrease of about $\frac{3}{4}$ per cent.

One of the Pittsburgh papers is trying to show how that city may become another Clyde by engaging in the "whaleback" business. It would at least be possible to save the freight on steel plates to Duluth.

The Mexican Government has put into its treasury \$50,000 forfeited by a railroad company, which failed to begin work in Sinaloa, as provided for in the concession. Altogether the amount of forfeits gathered in makes a considerable sum, which will go to offset the extravagant subsidies pledged in more successful undertakings.

Persia admits grain and nearly all other kinds of food free of duty.

The Labor Congress in Brussels declared that "workmen ought to take every precaution before striking."

Towing disabled steamships costs more than the amount of salvage awarded, on account of the strain upon the towing vessel, and some of the largest companies will hereafter tow only ships of their own line. In a recent case, where \$50,000 was received, the tower was so badly strained that more than this sum was expended in repairing. Most of the riveting in her after body was started, some of the ribs were broken and the plates wrinkled.

Experiments in producing rain artificially by exploding dynamite by means of balloons and electric apparatus, are so successful that "rain to order" is by no means an absurd idea. The only trouble will be in collecting the bills. Professor Curtis of the Smithsonian Institution says the explosions have produced definite and practical results.

The so-called Linseed Oil Trust realized a net loss during the last fiscal year.

The Russian bear last week was too much for the bears on the Produce Exchange, some of whom were badly squeezed.

The contemplated west side transit up town from Fort George to Yonkers, as now laid out by the commission, will call into play good engineering skill, and provide for a liberal consumption of iron in the construction of aqueducts. On that part of the route there are eight viaduct sections, of from 500 to 4300 feet in length, and from 15 to 110 feet in height. The highest and longest on the road begins at Fort George. It continues to 213th street, just west of the King's Bridge road.

The importance of the grain movement to the seaboard as affecting transportation interests is indicated by the fact that during the first six months of the present year the loss of grain traffic from Chicago to the four principal cities on the Atlantic seaboard exceeded 1,000,000 tons, the

contraction being equal to 53,000,000 bushels. The estimated loss of revenue for the time mentioned is \$4,000,000. Increased railroad receipts in the future means an enhanced value for railroad bonds, which will be sought for investment, and from the proceeds of sales money will be available for the purchase of rails and rolling stock.

Valuations in some of the counties in Michigan are being marked down heavily, on account of the disappearance of pine timber, the closing of shipyards, the dismantling of sawmills and the removal to other parts of those who have accumulated fortunes.

The announcement of the discovery of anthracite coal in Sonora, Mexico, is one of very great importance to the whole Pacific Coast. Heretofore the cost of fuel has been one of the great hindrances to the industrial development of that section, but if anthracite coal exists in the quantities reported in Sonora, within 60 or 70 miles of the coast, it will make it possible, by building a railroad of that length to Guaymas, to lay down anthracite at San Francisco at the price which has heretofore been paid for bituminous coal.

Florida is boasting of a new industry. In Wakulla County thousands of horse collars are made from the bark of the wahoo, a variety of bass wood. A merchant of Crawfordville recently shipped 12,000 of these and has thousands more to ship.

Agitation continues in favor of substituting iron pit posts for wooden ones in coal mines, as they would not burn in case of gas explosions or similar accidents.

The interests of the entire country would be promoted by selling grain at a moderate price, high enough to reward the producer, yet not so high as to cut off or materially reduce the export demand. An old observer says: "If the price is permanently advanced the home consumption will be rapidly curtailed, and the shipments will be limited thereby. It is not true that foreign markets will take all the grain this country can spare at whatever price we choose to ask for it. The exports will be governed largely by the selling rate, while the home consumption will be affected the moment breadstuffs become dear or there is a common impression that they will be dear. The producer will thus be cut off from his market both at home and abroad, leaving a large stock on hand to hang like a nightmare over the growing crop of the succeeding year. To encourage speculation, to put up prices, to shout daily over the needs of the foreign market as an incentive to higher rates, and to gather all these together as signs of a present or a coming prosperity, is to defeat the end in view and antagonize the best interests of the country."

The abandoned farms in New Hampshire and Vermont are becoming very scarce. State commissioners charged with the duty of repeopling them have done their work so well that nearly all the vacant homesteads in each State have been either taken up by poor people who could obtain them at a small price, or by city residents who intend to use them as summer homes.

A factory at Jacksonville, Fla., for the manufacture of fiber from the palmetto leaf, will have a large capacity.

Reports come from Philadelphia that another "coal war" is threatened, the junior security holders of the Reading Company having become restive under continued restriction, which deprives them of returns for their investments. The *Inquirer* says the matter might be amicably settled by the other coal roads restricting their shipments to their present quotas

and allowing the Reading to mine the natural increase of the trade in addition to its allotment. Certain it is that a great deal of coal has been sold at low prices, the June schedule generally prevailing, despite all the proclaimed advances. The claim that coal is delivered under "old orders" is a kind of prevarication so thin as to be plainly transparent. Therefore "a break" would excite no surprise.

The integrity of officers high in authority in the Dominion is severely reflected upon by recent investigations concerning Government contracts. One Cabinet officer and a member of Parliament have resigned and others occupy positions which might be vacated without loss to the public service.

It is a wholesome sign that the Western farmers are too busy handling their crops to attend Alliance meetings. Bushels of grain are more eloquent than speeches, and dollars are more weighty than resolutions.

A ship channel in New York harbor between Communipaw and Bayonne and the reefs opposite is proposed and is being discussed by the Governor of New Jersey and the Federal authorities. The reefs and artificial islands will be available for warehouses and shipping purposes, as well as the adjacent shore front, after a liberal expenditure, the channel alone costing some \$3,000,000.

The London underground railway line, 3½ miles long and operated by electricity, although it has been only some eight months in operation, proves to be a formidable competitor with some of the shorter surface lines. If extended it would take a still larger proportion of the traffic.

An oil geyser just struck in Hancock County, Ohio, is good for 70,000 barrels a day and is pronounced the largest in the United States.

The Labor Congress held at Brussels does not seem to have accomplished much in its efforts to uphold the interests it professed to represent. There was too much conflict of opinion and the style of discussion was too obstreperous for deliberate consideration. The best measure approved was the exclusion of anarchist delegates.

If the opinion gains strength that there will not be a speedy return of American gold in very large amounts, there is a feeling no less prevalent that if necessary the people on this side of the Atlantic can do without it.

New York's assessable valuation has nearly doubled in the last 20 years, and in the last decade growth has been more rapid than in that immediately preceding. The present year's valuation is \$1,464,247,820, and if progress is but little accelerated it is thought the \$2,000,000,000 mark will be passed at the beginning of the next century.

The great smelter at Monterey, Mexico, is now running three furnaces and another is nearing completion.

A committee of the New England Road-masters' Association, consisting of G. A. Bishop of the Fitchburg, E. H. Bryant of the Old Colony and J. W. McNamee of the Fitchburg roads, in a report on the best method of securing rails to ties, state: "We know of no better method than with good spikes, and for that purpose would recommend the Goldie steel spike (manufactured by Dilworth, Porter & Co. of Pittsburgh) as being superior to any we know of."

The second edition of A. A. Blair's excellent work on the "Chemical Analysis of Steel" has been published by the J. B. Lippincott Company of Philadelphia.

The Iron Age

New York, Thursday, August 27, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN B. KING, - - - BUSINESS MANAGER.

A Revival of Speculation.

The more sanguine element in the community has been very much encouraged by the cheerful outlook for the agricultural interests in all those parts of the country where cotton is not the leading product. There has been a good deal of successful speculation in grain, and while the foreigners are credited with having captured the lion's share of the profits from the rise, the fact remains that we have once more that fortunate coincidence of large crops and good prices. Comparisons of conditions now prevailing and those which created the great boom period of 1879-1881 are frequently heard. Then, too, the large earnings of the farmers were at the bottom of tremendous speculation and industrial activity.

It cannot be denied that there is a growing feeling among business men that we are on the eve of an era of speculation, of which the happenings in the grain markets have been only a forerunner. There are many who will be anxious to encourage this conviction, foremost among them the capitalists and speculators who have for many weary months carried stocks and bonds which have been practically unsalable. It is likely, too, that the foreign holders of many American securities will seize every opportunity to unload. Still, if there is a strong investment and speculative demand, the outpouring of securities from the strong boxes of bankers and investors may be taken care of. If the fever is once started, it will rage in spite of such chilling influences. Thus far, however, there is little real evidence that general interest has been awakened. Bond sales have been on a more liberal scale at advancing prices, that being the only proof that the investor has taken hold. It will take a far more pronounced rise before the majority of men of moderate means have courage enough to indulge in speculative purchases. So far as the great iron and allied trades are concerned, general prosperity cannot come until railroad mortgages and miscellaneous securities have found eager purchasers. When the present accumulations have been disposed of, when holders have seen values approach and pass the figures at which the securities they have owned so long were originally bought, then the time will come to float new enterprises, and put older concerns into the good condition which poverty has allowed to deteriorate.

All this will take time, and the delay incident to the change from suspicious lack of confidence to buoyant or even reckless

activity may cause some disappointment and hesitation. Even though the professional speculators anticipate, the great mass of investors move slowly. It will take a good deal of time before the returns for the crops have been received and the problem of how to place the profits presents itself to those who directly or indirectly receive their share of them.

The Silver Question.

There were substantial reasons for the growing confidence among business men respecting the stability of gold as a basis of valuation. The mere suggestion that by some hocus-pocus it might slip from under, perhaps with little warning, has been sufficient to hold vast interests in abeyance, to create a widely extended feeling of uncertainty and in fact to produce a partial paralysis of business nerve. How far the depression so often complained of is attributable to this cause it is impossible to show, but according to all indications the uncertainties respecting the coinage of silver have had an important influence. Decisive action on the part of the last Congress was averted, but it still remained for the Secretary of the Treasury to determine what should be the policy of the Government with reference to the momentous question of finance. Secretary Windom proved equal to the emergency, and his successor has avoided pitfalls into which others might have stumbled. Meanwhile the silver kings, through the Western grangers, started new alarms, but phenomenal crops of wheat and other cereals, by allaying the feeling of discontent among the agricultural classes, have served in some measure to silence their clamor and thwart their purposes. Already it is apparent that a free coinage bill will encounter tremendous opposition, irrespective of party, both in the Senate and the House, aided to which is the certainty of the President's veto, as a last resource. On this point President Harrison has spoken, in his speech at the Bennington celebration. He said:

I believe that conservative views of finance will prevail in this country. I am sure discontents and temporary distress will not tempt our people to forsake those safe lines of public administration in which commercial security alone rest. As long as the general government furnishes the money of the people for their great business transactions, I believe we will insist that every dollar issued, whether paper or coin, shall be as good and be kept as good as any other dollar that issues. The parity, the equality of what we call dollars must be preserved or an element of uncertainty and of bankruptcy will be introduced into all business transactions.

With the recognized party leaders unanimous in sustaining these views, it is not surprising that silver persists in selling as low as \$0.985 per ounce, the price paid at the last Treasury purchase, in total disregard of the Silver act, which fixed the maximum at \$1.2929, lest the metal should boom to an unreasonable extent. The tone of silver speculation is one of the signs of the times, and most significant in its bearing on the currency question.

The Treatment of Workmen.

There is probably no single influence bearing more directly or forcibly on the successful management of a manufacturing business than the treatment by foremen and superintendents of the employees under their charge. Good treatment bears fruit in the shape of faithful and zealous service. It secures good-will, and consequent desire to please, which leads to substantial results. And, on the other hand, harshness—even without positive injustice—is productive of antagonism and resentment, which, although it may not be exhibited openly, or at least intentionally, will show its effects in the rendering of perfunctory service, a want of interest in the performance of duty, and the habit of looking forward to "quitting time" as the one desideratum of the daily life. When to harsh treatment is added injustice the grievance is multiplied tenfold. Moreover, the effect does not cease with quitting time. Working hours form so large a proportion of our lives that the impressions then produced will inevitably color the few hours of emancipation and give tone to our entire existence. A working-man, going home at night from his daily work, even though it be of the most laborious and fatiguing character, will experience a buoyancy or depression of spirits in accordance with the moral atmosphere of his place of employment. Of course all are not equally sensitive, but there are very few who are not sufficiently so that the effect will obtain, and not only with themselves, but with their families as well, for the home life is more or less affected by the spirits of the bread-winner. This is no mere sentimentalism. The question has its humanitarian as well as its economic side, and the two cannot be divorced, in effect at least. Whatever might be the motive in according proper treatment to those under our authority, the result must always be more happiness to the employee and incidentally to his family, as well as more dollars to the employer.

Unfortunately it is the rule (and proven by no overabundance of exceptions) that kind and considerate treatment is conspicuous from its absence. This is more particularly true of establishments employing a large number of hands, where a workman's individuality is almost lost sight of, and he is looked on as a mere machine—a unit among hundreds or thousands—here to-day and gone to-morrow; his presence or absence making little or no difference except as it makes one more or less in the rank and file of producers. The foreman under whose special charge he may be takes no interest in his personal affairs—whether he is prosperous or unfortunate, sorry or glad; business is business, and there is no sentiment about it, so the only thing to consider is as to whether he does a day's work in a day. If he does well, and produces a good return for the amount of wages he receives, it is accepted as a matter of course. He gets no censure, but neither is he commended. But let his work prove unsatis-

factory, either as to quantity or quality, and he is unceremoniously dismissed, at a moment's notice.

Naturally, as this order of things has been the rule so long, the workingman looks for no better, but accepts it as a matter of course, and is content if, by doing his day's work in a manner to avoid censure, he can retain his position as a permanency; but with no thought nor ambition of making his position a better one, until some agitator comes to the front and persuades him that he has a grievance and must dictate impossible terms to his employer or "strike."

One of the inconsistencies of the situation is, that those of the foremen who have risen from the ranks—and they are a large majority—are not infrequently the most arbitrary and harsh in their intercourse with their subordinates. While they, of all others, are best able to put themselves in the places of the workmen, and appreciate the effects of good or bad treatment from their standpoint, it would seem as though they were avenging themselves for the treatment of which they had formerly been the victims by dispensing it to those under their authority. And, among the latter, those who were his contemporaries in service before his advancement must naturally find it especially humiliating to their self love, from the thought that they had been equals. Where a foreman has never held an inferior position in an establishment his actions are not observed nearly so critically, and he may do with impunity what would be considered arbitrary and tyrannical in an ex-workman. Respect for legitimate authority is an inherent quality in human nature, and the disposition to set it at defiance is an abnormal condition which will rarely develop where the intercourse between superior and inferior is as it should be. Superintendents and even proprietors—although their direct intercourse with the workman is more limited than that of foremen—must exercise considerable influence on the kind of service rendered. The more exalted his position the greater the effect of his pleasant or harsh words, even though of the briefest.

While no flock is without its black sheep, the fact is proven that in establishments where the employees are kindly and considerately treated there is little or no trouble from insubordination. Agitators may expend their entire stock of eloquence and not be able to develop a "grievance," not so much because there is none as that the workmen will not believe there is. They are satisfied, and in such an establishment, if sufficiently old, may be found those who have worked there from boy to man—father, son and even grandson. What a pity such are not the rule, and not very rare exceptions.

It is by no means a utopian idea that herein lies the most important factor in the solution of the great "labor problem." The antagonism between capital and labor, which of late years has developed into a universal warfare in which both sides are hurt and neither benefited, would never have existed if no cause of dissatis-

faction had obtained, and that it did exist is due, more than to any other cause, to the lack of proper feeling between master and man. The labor problem is considered one of the greatest questions of political economy of the age. Many and profound are the theories and arguments advanced for its solution, and not a few are there who take the pessimistic view that there is no solution—that capital and labor are essentially antagonistic elements, and must continue to be such till the end of time.

The modern prophet who will preach to the employer of labor the doctrine, "Put yourself in his place," will probably be treated as were some of the prophets of old. Metaphorically, he will be stoned. Nevertheless, if a few of the progressive among employers will adopt, experimentally, a system of uniform kindness and courtesy toward their employees, and, after a reasonable time, publish the result, we do not think it requires the gift of prophecy to foretell that it would be such as to induce others to follow the example. The responsibility extends from the highest to the lowest in authority, from proprietor to petty foreman. But as in the proprietor is vested the supreme power, it is his duty to see that each and all of his subordinates carry out faithfully the new policy, that they put themselves in the places of those directly under and subject to them, and treat them as they themselves would wish to be treated were their relative positions reversed.

Official Corruption in Canada.

Canada is humiliated by scandals caused by official malfeasance high up among those in authority. The revelations now making through an investigation into contracts for public works afford a spectacle of official corruption seldom paralleled. One is reminded of the worst days of the Tweed ring, with this difference, that few seem to have been too near the Premiership to have wholly escaped the contaminating influence. Some of the chief officials in the public works department have been expelled from office or have resigned, while at least one member of Parliament has vacated his chair, and even the Premier of the Province of Quebec, who seems to have fled the country, is openly charged with grave offenses. The array of testimony fills many newspaper columns, and the allegations are such that the authors, who represent practically the entire provincial press, are criminally liable unless the respective charges can be sustained. A member of a large contracting firm testified that he paid into the hand of the ex-Minister \$10,000, and other contractors, in acknowledgment of various favors, united in a "testimonial," said to be equivalent to \$25,000 or upward. Through intermediate parties other large amounts passed from contractors, in the shape of *douzeurs*, to parties high in authority, and for which there is no accounting. These revelations are still in progress, with results that reflect severely upon the standard of official integrity in the Do-

minion. The fact must be borne in mind when forming a judgment respecting these matters that party spirit in the provinces runs high, and that animosities are engendered for which there may be no adequate cause. But irrespective of the struggles of faction, the unanimous condemnation of the press in reference to corrupt practices and the apparent determination to uproot the evil are wholesome indications. It is not so much the prevalence of the evil as the manner of suppressing and eradicating it that will permanently affect the honor of the Dominion. The experience of the Dominion officials is pregnant with lessons to the large class of men engaged in the construction of public works, whether in Canada or the United States, and who are assailed with temptations to depart from a course of strictest rectitude.

The Park Place Disaster.

Although a number of witnesses insist that the Park place disaster was caused by an explosion, it is generally acknowledged that the utter collapse of the Taylor building was due to weakness. It is not claimed that the structure was not originally reasonably strong, but it is evident that it was not designed to carry the loads with which it was gradually weighted, and that it suffered from the long-continued vibrating stresses created by the lithographic and other presses.

We are in a position to speak with some authority on the questions involved in the discussion of the causes of the disaster, since this office has gone through a costly experience in an attempt to place a large printing establishment in the upper floors of a fairly modern iron-front building. When, a number of years since, our business had outgrown for the third time the quarters in which it had been carried on, it was decided to remove to the large building at 66 and 68 Duane street. The plans included the location of the printing office in an upper floor of the building, with its equipment of eight presses, while in the former place of business that part of the machinery had been assigned to the cellar. This step was not taken without an exhaustive inquiry into the dangers which might grow out of the working of heavy machinery when placed on the upper floor of the building. The superintendent of the printing office, a man of wide experience in the trade in this city, insisted that no risks would be run, since he had never worked in a printing office doing the same kind of work below the third floor. The opinions of three architects who were consulted agreed that the building was able to carry the load, but declined to commit themselves as to the effect upon it of the vibration. The Building Department of the city was consulted, and yet no doubts as to the expediency of the plan contemplated were raised. The manufacturers of the presses were asked to give the results of the observations gathered by them in their intercourse with their customers. They, too, reported that it was a common, if not universal, practice to

place printing presses of the character used in our establishment in the upper floors of New York business structures. The management felt that doubts must give way before such an array of expert testimony, justified by the common practice of the industry.

One by one the eight large presses, which weigh about 6 tons each, went into commission, but when the whole plant was finally in operation the vibration of the entire building was so marked that the management became alarmed. The presses have a reciprocating motion, which, when it happened to be synchronous with two or more, intensified the jars inflicted upon the structure. In spite of the assurances of practical builders that there was no danger so long as the first signs of warning—cracks in the walls—did not appear, a prompt decision was arrived at. Temporary accommodation for the printing office was sought and obtained in the vicinity, and the removal was effected at great inconvenience and a considerable outlay.

In the mean time the business had expanded further, so that enlarged quarters were needed for what may be called the manufacturing plant of the business—the composing room, bindery and printing establishment. The site chosen was the large structure at 490 to 502 Cherry street. Warned by previous experience, the lease was not signed until the owner of the building assumed the responsibility and guaranteed against any loss which might grow out of the location of the printing office on the second floor of the building. After one year's occupancy, the owner offered to pay the cost of the removal of the presses to the ground floor, having become convinced that the vibration caused by the machinery when placed even at so small an altitude was injuring the structure. The removal was effected, and now every one of the heavy presses, increased in number to 12, rests on a solid foundation.

Such has been the costly experience of the management of *The Iron Age*, whose prudent course, almost in defiance of the general practice of the majority of those in the business, has been amply justified by the recent deplorable catastrophe.

It is only just to state that many have, probably unconsciously, been drifting toward the danger line. As in many other branches of industry, the printing business has undergone rapid changes during the past decade. The tendency has been toward heavier machinery, running at steadily increasing speed, in order to carry capacity to a maximum. The principal motive has been to lower the cost of labor per unit of product, since day wages have advanced about 10 per cent., while an additional advantage has been sought in the lowering of rent, general expenses, &c. These changes have been gradual, and it may be readily imagined that they have placed upon buildings where old established concerns have long retained their location, strains whose magnitude those hardly appreciate who have become accustomed to the jars and vibrations.

We believe that the concensus of opinion which overcame the doubts of the publisher of *The Iron Age* when first he placed his printing office on an upper floor of the building at 66 and 68 Duane street reveals a sense of security which it is true is now rudely shaken, but which must have been the justification for a good many very dangerous establishments.

PERSONAL.

Walter McDermott, the London representative of Fraser & Chalmers, builders of mining machinery, Chicago, has returned to Europe after a brief sojourn in this country.

Sir Henry Truman Wood, of the Society of Arts, Sir Owen Cunliffe and James Dredge, editor of *Engineering*, who are members of the British Commission to the Columbian Exposition, will leave England for a visit to this country early next month.

J. H. Harris of the Worthington Steam Pump Works starts for Europe this week.

Robert Vierling, president of Vierling, McDowell & Co., Chicago, left for Europe August 15. He will visit some of the largest iron foundries and furnaces in France.

E. Norton, the Chicago tin-plate manufacturer, sailed Saturday in La Bourgogne for Europe. E. C. Potter, formerly with the Illinois Steel Company, who is associated with Mr. Norton in the rolling of plates for tin-plate making from fluid steel, has been abroad since the early part of July. Mr. Norton will probably visit the Welsh tin-plate works during his trip.

Thomas T. Morrell, chief chemist of the Cambria Iron Company of Johnstown, Pa., has resigned his position, and with his wife has returned to his old home in Maine. Mr. Morrell has been the chief chemist of the Cambria Iron Company for more than 25 years. He is a nephew of the late Daniel J. Morrell.

William F. Durfee, the general manager of the Pennsylvania Diamond Drill and Mfg. Company, of Birdsboro, Pa., has resigned, his resignation to take effect on September 1.

The Director General of the World's Fair has nominated Chief Engineer L. W. Robinson of the United States Navy to be Chief of the Machinery Department.

Among those proposed for membership in the American Society of Mechanical Engineers are E. P. Bates of Syracuse, N. Y.; Stanley G. Flagg, Jr., of the well known Philadelphia manufacturers of steel castings; G. Henderson of the E. W. Bliss Company, Brooklyn; G. T. Lewis of the Vesuvius Iron Works, Sharpsburg, Pa.; John T. Meatz of the Mason Machine Works of Taunton, Mass., and W. S. Washburn of Chandler & Washburn, Boston, manufacturers of vises.

Richard L. Coleman, president of the New Birmingham Iron and Improvement Company of New Birmingham, Texas, has been appointed World's Fair Commissioner of Mines and Minerals for the State of Texas.

The new electric light plant for the Pawtucket Gas Company, at Pawtucket, R. I., will be very substantial. The dynamo room will be 60 x 150 feet, the engine room 58 x 78 feet and the boiler room 60 x 80 feet. The side walls will be of brick, with iron roof covered with corrugated iron. The whole plant will be built by the Berlin Iron Bridge Company of East Berlin, Conn., after the plans and

specifications of Remington & Henther, engineers and architects, of Providence, R. I.

Street Railway Convention at Pittsburgh.

The Tenth Annual Convention of the American Street Railway Association will be held in the Monongahela House, Pittsburgh, on October 21, 22 and 23 next. The above-named association is the only organization of street railway men now in existence in this country. It was organized in Boston in 1881, and now has the names of 171 street railway companies on its roll of members. At the coming Pittsburgh convention it is expected that fully 300 delegates will be in attendance, in addition to about 300 manufacturers of street railway supplies, who will also be present. The membership is limited to the officers, individual owners and lessees of street railways, the manufacturers of street railway supplies not being permitted to take part in the proceedings, unless by special invitation. The object of the American Street Railway Association, as set forth in its constitution, is "the acquisition of experimental, statistical and scientific knowledge relating to the construction, equipment and operation of street railways and the diffusion of this knowledge among the members of this association, with the view of increasing the accommodation of passengers, improving the service and reducing its cost; the establishment and maintenance of a spirit of fraternity among the members of the association by social intercourse, and the encouragement of cordial and friendly relations between the roads and the public." The officers of the association for the present year are as follows:

President, Henry M. Watson of Buffalo, the president of the Buffalo Railway Company; first vice-president, William A. Smith, general manager of the Omaha Street Railway Company; second vice-president, Charles Odell, president of the Newburyport and Amesbury Street Railway Company of Newburyport, Mass.; secretary and treasurer, William J. Richardson, secretary of the Atlantic Avenue Railway Company of Brooklyn, N. Y. Executive Committee: Thomas Lowry of Minneapolis, David F. Henry of Pittsburgh, Albert E. Thornton of Atlanta, Henry M. Littell of Cincinnati and Thomas C. Keefer of Ottawa, Canada.

During the convention in Pittsburgh association will hold four business sessions, the balance of the time to be devoted to sightseeing. Among the papers to be read are the following:

"A Perfect Electric Motor," by H. A. Everett, secretary of the East Cleveland Railroad Company, Cleveland, Ohio.

"A Year's Progress of Cable Motive Power," by J. C. Robinson, formerly vice-president of the Los Angeles Cable Company, Los Angeles, Cal.

"Public and State Treatment of Corporations," by G. Hilton Scribner, president Central Park, North and East River Railroad Company, New York.

"The Dependent Overhead or Underground System of Electric Motor Power," by George W. Mansfield of the Attleboro, North Attleboro and Wrentham Street Railway Company of Attleboro, Mass.

"The Independent Storage or Primary Battery System," by Knight Neffel, electrician Lancaster Street Railway Company, Lancaster, Pa.

In addition to the above papers the convention will discuss the relative merits of cable and electric power in street railroading, expedients for reducing operating expenses and increasing traffic, the construction of power houses and the safeguards against fire, breakdowns and other accidents, the prospects and possibilities of the storage battery and conduit electric cable, the use of street cars as collectors and carriers of the mails, labor troubles and other matters pertaining to and having a bearing on the various systems of street railways.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., August 25, 1891.

The officers of the Ordnance Department of the army stationed at Washington, and engaged in the active work of developing the scientific and practical details of the high power guns used in modern field service and coast and harbor defense, are now chiefly interested in the perfection of satisfactory gun carriages of the different types. The new high-power breech-loading guns require carriages not only capable of carrying the great weight of the guns themselves, the 8-inch weighing 14 tons, 10-inch 30 tons, and 12 inch 52 tons, but in resisting the tremendous recoil and in handling the enormous mass for rapid loading and firing.

The improved gun carriages now in demand are grouped under five types.

1. The barbette carriage of simple construction for high sites, as at San Francisco.

2. The disappearing carriage for 8 and 10 inch gun. There are several types under this group, among them the Buffington-Crozier, Gordon and pneumatic carriages.

3. The elevator carriage for use in batteries, by means of a hydraulic elevator.

4. The casemate carriage. This is the most complicated and expensive. The best in this group has been worked up by the Gruson Works at Magdeburg, a foreign establishment.

5. The turret carriage. This is of simple construction. As the turret revolves, the carriage therefore only requires means to raise and depress the gun.

The Ordnance Department propose to try all the different styles, and will select the best. The development of the disappearing carriage is receiving a large share of attention as being the most desirable for general use.

The latest advices from the Dupont Powder Works indicate that the combination of ingredients intended to produce the pressure of 35,000 pounds to the square inch and 1920 feet velocity per second has been made, and a supply has been forwarded to Sandy Hook for trial in the new 12 inch gun erected there for a scientific test of physical and mechanical qualities.

The officers of the Steel Inspection Board are very much interested in the reported discovery of a new process of making Bessemer steel from certain grades of Southern pig without mixture. It is claimed that the Southern Iron Company have made the improvement. If all that is claimed for the process is established an officer will be sent to investigate and report for the information of the Government.

The ordnance branches of both the army and the navy are now on the highway to rapid advancement in the manufacture of high-power guns, in the appliances for their successful use and in the powder necessary to the securement of the most effective results.

The Alliance Commercial Convention held at Topeka during the past week had before it and discussed for an entire day a plan for the establishment of co-operative stores in every city in the Union. H. W. Sandusky of Columbus, general secretary of the Alliance Exchange, claimed that a company known as the National Union Company had been chartered in the State of New York with a capital stock of \$20,000,000, \$3,000,000 of which it is said is already paid up. Each town is to have a resident manager, who has charge of the store and has a vote in the meetings of the company. Goods are to be purchased by regular agents in large quan-

tities and shipped direct from the centers or distributing points in large quantities direct to every store. The distributing points are to be New York, Chicago, Kansas City, New Orleans and Salt Lake or San Francisco. Goods are to be sold at the lowest possible figure, the profits to be paid out in salaries, expenses and rebate to regular purchasers. A committee was appointed to put the scheme into immediate operation.

The Batesville Manganese District.*

BY DR. R. A. F. PENROSE, JR.

Location.—The region is in the northeastern part of the State, in the valley of the White River and above the confluence of the latter with the Black River. The region includes parts of Independence, Izard and Stone counties, comprising an area of about 122 square miles, in which manganese ores occur at greater or less intervals.

History.—Manganese mining was begun in the Batesville region between 1850 and 1852 by Col. Matt Martin, but no extensive work was done until 1881, when E. H. Woodward commenced mining. In 1885 the Keystone Manganese and Iron Company began operations at the Southern Mine, and at once became the largest producers of manganese in the region. At present this company and John B. Skinner & Co. are the principal active operators. Between 30,000 and 85,000 tons of manganese ore were shipped from the Batesville region between 1850 and 1890, though almost all of this quantity was shipped between 1881 and 1890 inclusive.

Topography.—The prominent topographic features of the Batesville region and the surrounding country are the Boston Mountains, south of the White River; the chert hills, north of the river; the rolling limestone and sandstone country still further north, and the low, river bottom area which cuts off the mountainous and hilly country on the east.

Structure.—The general structure of the Batesville manganese region is that of a broad monocline dipping to the south and southwest at low angles, and finally disappearing under the much more disturbed carboniferous rocks of the central part of the State. Sometimes the rocks are horizontal or dip at a fraction of a degree, but at intervals they dip at angles of from 5° to 20°; and the general monoclinal structure of the country may be said to be made up of gently sloping or even horizontal areas connected by local areas with steeper dips. Faults with throws of from 50 to 200 feet sometimes occur, and in certain places have an important bearing on the topography of the country.

Age of the Rocks.—The rocks of the region are of Silurian and Carboniferous ages. The lowermost Silurian rocks belong to the Calciferous group. Above them is the Izard limestone, overlain in turn by the St. Clair limestone. The latter formation represents the uppermost member of the Silurian in the region, and has been determined by Prof. Henry S. Williams as belonging to a horizon intermediate between the Trenton and Niagara groups. The St. Clair limestone is the source of the manganese ores.

The Carboniferous rocks include the Mississippian, or lower Carboniferous, and the Millstone grit. The Mississippian of southern Missouri and northern Arkansas have been divided by Professor Williams into three groups, which, in ascending order, are: The Chouteau, Osage and Genevieve or Boston. The Chouteau includes the "Lithographic," "Vermicular"

and "Chouteau" of the Missouri classification, and, as far as known, is absent in the region in question. The Osage group, which includes the "Burlington" and "Keokuk" groups, is represented in the Batesville region by the Boone chert, the Fayetteville shale and Batesville sandstone. The Genevieve or Boston group is represented by a series of limestones, shales and sandstones, reaching from the top of the Batesville sandstone to the base of the Millstone grit. The presence or absence of anything representing the Devonian age is in doubt. The contact of the Silurian and Carboniferous is generally represented by sandy or shaly strata, or both, varying from a few inches to 30 or 40 feet in thickness. In one place a material, which, under the microscope, partakes of the nature of volcanic ash, is found at the parting of the two horizons, in bed from 6 to 15 inches in thickness. The Paleozoic area is cut off abruptly on the east of the Tertiary, Pleistocene and Recent deposits of the Mississippi Valley.

The Manganese Ores.—The manganese ores of the Batesville region represent oxides of the metal. They are usually in the form of psilomelane or braunite. Pyrolusite is found in small quantities, and wad occurs in some places. The sample of braunite described by William Elderhorst of the Owen Survey, in 1858, and that described in the present report, show certain noticeable variations in the contents of silica similar to the variations in the braunite of Elgersburg, Germany, analyzed by Turner and by Rammelsberg; the Arkansas specimen analyzed by Elderhorst and the Elgersburg specimen, analyzed by Rammelsberg contained 9.968 and 8.63 per cent. of silica, respectively, while the Arkansas specimen analyzed by the present survey and the Elgersburg specimen analyzed by Turner showed 0.18 per cent. of silica and no silica respectively.

The commercial value of the better grades of the Batesville ores, as shown by chemical analyses of carload shipments, is equal for the manufacture of spiegeleisen and ferromanganese to the best at present mined in the United States. The strong points of the ores are their high per cent. of manganese and their low per cent. of silica. Their weak point is their occasional high per cent. of phosphorus. This ingredient, however, is only occasionally in injurious quantities, and large amounts of ore are mined which contain a very low per cent. of it.

Derivation of the Manganese Deposits.—The manganese ores occur in masses and nodules of various sizes in a red clay, and both they and the clay are the residual products of the decomposition of the St. Clair limestone ("gray rock"). The latter formation is a crystalline rock, sometimes containing interbedded lenticular strata of sandstone or of shaly materials. The ore occurs in various positions from the base to the top of the limestone, either with or without the sandy and shaly accompaniments. It exists in flat layers following lines of bedding, in irregular masses, in small grains, or in a finely disseminated state, giving the rock a chocolate brown color. The ore is only of local occurrence in the rock and is often absent over considerable areas. Therefore the ore-bearing clay is also of only local occurrence. In a similar manner, the Batesville region, considered as a whole, represents an isolated abnormal accumulation of manganese in the St. Clair limestone. This formation is characterized by small quantities of manganese throughout a large area of exposure in northern Arkansas, but, so far as known, it exists in large quantities only in the Batesville region. The limestone is found in all stages of decay, sometimes containing only small pockets of the residual materials on its partially decomposed surface, at other times completely decayed, leaving only

* From the Annual Report of the Arkansas Geological Survey.

the residual clay with greater or less quantities of ore.

The ore existed in the limestone, at least in the surface exposures of that rock, in the oxide form, just as it now occurs in the clay. Possibly below the drainage level of the country it may be in the form of carbonate, in which form, probably, it was originally deposited; but this has not yet been proved, and it is not impossible that it may exist in the oxide form throughout the whole extent of the limestone.

Chemical Relation of the St. Clair Limestone and the Manganese-Bearing Clay.—The analyses of St. Clair limestone and the residual clay show them both to contain, usually, different proportions of the same materials, though sometimes the carbonate of lime of the limestone has been completely leached from the residual clay; while the less soluble siliceous and argillaceous materials and some metallic oxides have been proportionally increased in their percentages. Almost all the ingredients, however, have suffered more or less loss.

Nature of the Manganese Deposits.—The ore-bearing clay is a plastic material generally of red, chocolate-brown or yellow color, and sometimes of a deep purplish-red. It contains the manganese ore in the same or nearly the same forms as the original limestone contained it—that is, in flat layers, irregular masses, grains, or as a finely disseminated dark chocolate brown coloring material. Very often the larger masses of ore have been broken in their change of position from the limestone to the clay, and now exist as irregular, angular fragments. The masses of ore occur in pockets in the clay, in quantities varying from a few pounds to over 500 tons.

The ore-bearing clay contains numerous more or less rounded masses of the St. Clair limestone, which represent the parts of that formation that have so far escaped decay. They have not been transported from without into their present position, as is often supposed, but are the remains of the decomposition of the limestone *in situ*.

Chert Capping of the Manganese Deposits.—The St. Clair limestone, before it decayed, was overlain by a chert formation (the Boonechert) sometimes over 200 feet thick. The process of decay has gone on underneath this covering, and the chert has been let down on the residual clay and ore in a broken mass, which, though partially decayed itself, often retains 30 to 60 feet of its original thickness, even after all the underlying limestone has been decomposed. By this undermining the chert has, in some places, suffered a slow subsidence of 50 to over 100 feet, and has been greatly shattered, broken, and curved, in a manner in some respects not unlike folding by lateral pressure. The unequal decay of the St. Clair limestone has caused an unequal subsidence in the chert, and the results are small shattered anticlines and synclines, depending for their form and extent on the contour of the underlying surface of the limestone.

Sometimes manganese in solution has been carried up into the cracks of the broken chert by capillary action and deposited in the form of oxide in thin black layers, nests, of films throughout the rock. In places also the base of the broken chert has become mixed with a highly manganeseiferous residual clay, which has filled the cracks and become indurated, forming a chert breccia. Occasionally rounded pebbles are inclosed in the breccia.

The Example of the Southern Mine.—The processes by which the manganese ores have been derived from the St. Clair limestone are well illustrated at the Southern Mine. The relation of the ore deposit as it now exists to its former condition in the limestone can be traced out, and the effects of the transition on the ore bodies and on the accompanying materials, as well as on the overlying chert, are apparent.

MANUFACTURING.

Iron and Steel.

Announcement is made that W. J. Hammond & Son, Pittsburgh, Pa., who proposed to erect an iron mill at Mansfield Valley, near Pittsburgh, have decided to abandon the project. No reason has been assigned for this change in their plans, but \$2000 which was subscribed by the citizens for the erection of the plant has been returned.

Work on the new plant of the Monongahela Iron and Steel Company now being erected at Hay's Station, a few miles from Pittsburgh on the line of the Pittsburgh, Virginia and Charleston Railroad, is being pushed rapidly. Unless something prevents the plant will be ready for operation not later than November 1. At the start only muck iron will be manufactured, but it is the intention of the firm to equip their plant for the manufacture of a full line of merchant bar iron. The plant as at first equipped will contain 20 single water-neck puddling furnaces built in two rows with a 15-foot race and 22-inch space between each of the furnaces. The firm have their own coal lands situated a short distance from the works, which insures them an ample supply of fuel.

The Leechburg Foundry and Machine Company, whose plant is located at Leechburg Pa., have closed a contract with Wallace, Bannfield & Co., Limited, proprietors of the Irondale Rolling Mill, at Irondale, Ohio, for the erection of a 22-inch plate mill, with necessary equipment, consisting of doubling shears, trimming shears, annealing furnaces, pickling machines and all machines and castings required in fitting up six tinning stacks. All of the above machinery will be of the very latest improved pattern, much of which has been designed by the Leechburg Foundry and Machine Company. It is expected the plant will be ready for operation not later than November 1 next, and will have a capacity of turning out about 300 boxes of tin plates per day. The same firm have also received an order for a roll lathe from the Reeves Iron Company, Canal Dover, Ohio, and are also building a cooling table for the Otas Iron and Steel Company, Limited, of Cleveland, Ohio. In addition to the above, the firm have a number of other large orders on hand, and are running full time in all departments.

A meeting of the creditors representing 80 per cent. of the indebtedness of the Lancaster Iron Company of Lancaster, Ohio, was held in Youngstown, Ohio, on Tuesday, the 18th inst. to wind up the affairs of that concern. A committee consisting of A. W. Jones of Youngstown, W. L. Rice of Cleveland and J. W. Russell of Lancaster was appointed to devise a plan. It is stated that the mill property and real estate connected with it will be sold at an early date, and the proceeds divided among the creditors. This plant was never put in operation, as the firm became financially embarrassed before it was completed. It is understood that it is one of the most complete plants in the country for the manufacture of merchant iron.

At the annual meeting of the stockholders of the Pittsburgh Forge and Iron Company, held in the office of the firm at Pittsburgh last week, F. E. Richardson was elected to the position of secretary, to fill the vacancy caused by the death of Jas. K. Verner. The following persons were elected to serve as a Board of Directors for the ensuing year: Calvin Wells, Jas. Verner, W. W. Speer, Jno. H. Dalzell, Osgood M. Edwards, B. H. Rubie and F. E. Richardson.

The Link Belt Engineering Company of Nicetown, Philadelphia, Pa., have just issued a revised price-list of the Ewart link belting, Dodge chain, tubular chain, the Howe belt chain, the Vulcan drop forge carrier chain and sprocket wheels. They also name prices of elevator boots, malleable-iron buckets and take-ups for elevators and conveyors.

The Essex Iron Company of New York, recently incorporated with the State Department, have filed a certificate setting forth that their capital stock, \$25,000, has been subscribed for as follows: Wm. H. Searles, 520 shares; Otis H. Cutler, 5 shares; J. M. Lewis, 50 shares; Romeo T. Bettis, 50 shares; Gustav Lindenthal, 625 shares.

The galvanizing department of the Britton Iron and Steel Works, at Cleveland, caught fire on the 17th inst., and was destroyed. Loss, \$20,000; insured.

M. V. Smith, metallurgical engineer, of Pittsburgh, who is acting in the capacity of consulting engineer for the Compania Industrial Mexicana of Chihuahua, Mexico, has received an order for the construction of a 10-inch and 12-inch combination roll train, one heating furnace, one scrap furnace, one

puddling furnace and a 5-ton hammer. The firm proposes to manufacture merchant bar iron from native scrap.

It is reported that the plant of the Solid Steel Works, at Alliance, Ohio, will be extended so as to double the capacity of the present works. The rapidly increasing business of the company renders it necessary to enlarge their facilities.

The Bessemer Rolling Mill, at Bessemer, Ala., will be sold at public auction on September 14.

There is a probability that the steel works of the Colorado Coal and Iron Company, at Bessemer, Col., will start up in the near future. New engines and cranes are being erected, and arrangements have been made for the introduction of gas as fuel.

E. Buxton & Son, Worcester, Mass., dealers in scrap iron and metals, are constructing new warehouses, offices, sheds and bins, and arranging a new yard, which is situated corner Southgate and Congdon streets. The yard is connected with the New York and New England Railroad by two special tracks, one depressed and the other elevated to facilitate the handling of the materials in which they deal.

The Alabama Rolling Mill Company of Birmingham, Ala., have just completed seven new puddling furnaces, making 23 in all, and are building a new gas furnace in the guide mill and adding new rolls to make T-rails from 8 to 20 pounds. The company expect to resume operations October 1, with a capacity of 75 to 80 tons of finished iron per day.

The Montvale Mining Company have been incorporated at Montvale, Tenn., to develop iron ore beds in the vicinity of Montvale Springs and to construct iron furnaces.

At a meeting of the directors of the Youngstown Bridge Company, held in Youngstown, Ohio, last week, Jas. P. Kennedy was elected to fill the position of general manager. For several years Mr. Kennedy was head bookkeeper for the Andrews Bros. Company, proprietors of the Hazelton Iron Works, at Niles, Ohio.

Naylor & Co., the well-known iron and steel merchants, have leased the Sharon Furnace, at Sharon, Pa., and will make a number of extensive improvements and enlargements to the plant. It is expected that the furnace will be ready to go in operation some time during October next.

Trouble is existing between the Oliver & Roberts Wire Company, Limited, of Pittsburgh, and the Amalgamated Association over the interpretation of the wages to be paid the nailers, as called for in the Amalgamated Association scale. The misunderstanding is only a slight one, but it has caused considerable trouble, and may result in a complete closing down of the entire plant of the firm. Several conferences have been held between members of the firm and officials of the Amalgamated Association, but instead of the trouble being settled, the breach has been widened. Another conference will be held in a few days, which may result in the trouble being arranged. The employees, who are all members of the Amalgamated Association, claim that there are a number of non-union men at work in the plant, and that as long as they continue to work the rules of the Amalgamated Association prohibit them from returning to work. The firm absolutely refuse to discharge these men, and this has been the cause of part of the trouble. It is possible that a solution of the difficulty will be arrived at during the present week, which will allow the plant to resume operations.

A strike has occurred at the Hazelton Iron Works of the Andrews Bros. Company at Niles, Ohio, over the question of the prices to be paid for scrapping. It is claimed by the firm that the employees are demanding 45 cents a ton more for scrapping than they are entitled to, while on the other hand the men assert that they are only asking the prices called for in the Amalgamated Association scale, which has been signed by the firm. Several officials of the Amalgamated Association visited the plant last week and endeavored to settle the matter, but were unsuccessful. It is promised that a conference will be held during the present week at which it is stated a determined effort will be made to settle the trouble.

Announcement is made that at a meeting of boiler makers held in Boston last week it was decided to commence making arrangements to enforce their demand for a working day of eight hours, to go into effect May 1, 1892. It is stated that a secret circular has been sent out to the secretary of the National Union calling on all members to strengthen their organization and create a defense fund for protection. Claim is made that every boiler

manufacturer in the United States has been notified that the demand for eight hours per day will be made on the above date.

Ground has been broken at Sharon, Pa., for the new plant of the Wilkes Rolling Mill Company, to be located adjacent to the plant of the Atlantic Iron and Nail Works of P. L. Kimberly & Co., Limited, at that place. Two buildings will be erected, one 60 x 64 feet in size, to contain engine and rolls, and the other 36 x 160 feet in size, in which the puddling department will be located. This plant will turn out muck bar only and it is expected that the entire output will be consumed by the various mills located in Sharon.

The La Belle Iron Works, at Wheeling, W. Va., have been closed down in all departments in order to make the usual annual repairs. During the stoppage a new battery of tubular boilers of 350 horse-power made by the Skinner Engine Company of Erie, Pa., will be placed in the plant.

Riter & Conley of Pittsburgh recently shipped two girders for traveling cranes to the Morgan Engineering Company at Alliance, Ohio, which were probably the heaviest girders ever made in this country, each weighing 27½ tons. The cranes for which they are to be used are being built for the Government.

Edith Furnace, in Allegheny, Pa., formerly operated under lease by the Monongahela Furnace Company of McKeesport, Pa., but purchased some months ago by the Oliver Iron and Steel Company of Pittsburgh, is undergoing extensive repairs and improvements, which will soon be completed. The furnace has been relined and three Cowper-Kennedy hot-blast stoves have been added. The size of the furnace will remain as before, 16 x 75 feet, but the capacity will be considerably enlarged on account of the more modern appliances which are being added. The work on the furnace is being done by Jas. P. Witherow, engineer and contractor, of Pittsburgh.

F. G. Tallman, mechanical engineer, Hamilton Building, Pittsburgh, has received an order from the Brilliant Steel and Iron Company of Brilliant, Ohio, for the erection of three merchant trains, 8, 12 and 18 inches in size. These trains will be placed in the building formerly occupied by the nail machines of this firm, they having decided some time ago to abandon the manufacture of cut nails.

Machinery.

The Campbell & Zell Company of Baltimore, Md., have just closed a contract with the Pabst Brewing Company of Milwaukee, Wis., for 900 horse-power Zell Improved Water Tube Boilers.

Hampden Corundum Wheel Company, recently removed from Chester, Mass., are now located at Brightwood, Mass., where they occupy a new building, which has been fitted up with the best appliances for making wheels. The company advise us that they have added new machinery, and are now prepared to meet the demands of a growing business.

The Hackney Hammer Company, Cleveland, Ohio, manufacturers of the Hackney power hammer, have just shipped one of their 200-pound Hackney hammers to the Pennsylvania Iron Works Company of Philadelphia.

It is stated that the Warren City Boiler Works of Warren City, Ohio, will remove to Middlesborough, Ky.

The Piedmont Foundry and Machine Company's plant, at Piedmont, Ala., has been purchased by the Chattanooga Saw Company, who will remove the plant to Chattanooga and organize a \$100,000 company to put it in operation.

The J. W. Porter Boiler and Tank Company of Pittsburgh, formerly the Carroll-Porter Company, have increased their capital stock from \$50,000 to \$100,000.

C. W. Woodford of Port Henry, N. Y., has just completed a horse-nail plant for export to South America, being the first manufactory of the kind introduced into that part of the world.

H. R. Osborn, Auburn, N. Y., has gone into the manufacture of the Diamond Gas Light Machine, in partnership with his father, Dr. B. E. Osborn, who is the inventor, at Syracuse, N. Y.

In connection with the Dennis & Roberts machine shop at Watkins, N. Y., E. H. Spicer intends to establish a molding plant. A cupola will be built and castings of all kinds produced.

The West Albany shops of the New York Central and Hudson River Railroad, West Albany, N. Y., which were burned last May, are nearly rebuilt. The roof will be of iron, and is being made by the Hilton Bridge Com-

pany, Albany, N. Y. A large amount of new machinery and tools is to be purchased for the renewed car shops.

The Lowell, Mass., Steam Boiler Works, recently destroyed by fire, are to be rebuilt at once on a much larger scale.

Gifford Bros., Hudson, N. Y., cast at their foundry the other day a half section of a fly-wheel for the Rand Drill Company of New York. The wheel, when completed, will be 18 feet in diameter and weigh 10 tons.

The Albany Construction Works, Albany, N. Y., are furnishing a large amount of architectural castings for many buildings in the city.

A 35 horse-power engine built by the Ball Engine Company of Erie, Pa., will supply the power for electric lighting for the Norfolk Beet and Sugar Company of Norfolk, Neb. A 100 horse-power tandem compound engine manufactured by the Ball Engine Company of Erie, Pa., is to furnish power for the Beatrice Rapid Transit Company of Beatrice, Neb. J. W. Parker, the Philadelphia agent for the Ball Engine Company of Erie, Pa., has sold an 80 horse-power engine to the Ivy City Brick Company of Washington, D. C. Also an 80 horse-power engine to George Kelly & Co. of Philadelphia. The Bellaire Gas and Electric Light Company of Bellaire, Ohio, are installing a 100 horse-power engine built by the Ball Engine Company of Erie, Pa.

The Jeffrey Mfg. Company of Columbus, Ohio, have in the hands of the printers a revised illustrated catalogue and price-list showing all the chain links and specialties manufactured by them. A wrought chain is one of the latest additions to their already large list of chains.

The annual meeting of the stockholders of the Westinghouse Air Brake Company of Pittsburgh is to be held in that city on Tuesday, September 2 next.

The Trethewey Mfg. Company of Pittsburgh recently placed on the market a new design of squaring shear, which is attracting considerable attention. Quite a number of firms doing business in Pittsburgh have recently visited the shops of the Trethewey Mfg. Company in that city and critically examined them. The Trethewey Mfg. Company have recently completed the erection of two of these shears, each of which weighs 32,000 pounds. One of them is intended for the New-Philadelphia Iron and Steel Company of New Philadelphia, Ohio, and the other for the Reeves Iron Company, Canal Dover, Ohio. These shears are constructed to cut sheets up to ½ inch thick, and up to 1½ inches long. This same design of shear can also be constructed to cut any kind of heavy plates.

Hardware.

The Columbia Horse Shoe Nail Company's new plant at New Milford, Ill., is completed with the exception of placing the machinery in place, which will be done at once and the plant put in operation within 30 days.

The Powell Wire Nail Machine Company have been incorporated at Cleveland, Ohio, with a capital stock of \$250,000. The incorporators are Stevenson Burke, E. J. Ingersoll, E. T. Ives, D. A. Dangler, W. J. White, R. Powell and H. C. Emison.

Miscellaneous.

At a meeting of the stockholders of the Pittsburgh and Chicago Gas Coal Company of Pittsburgh, held in that city this week, the capital stock of the concern was increased from \$200,000 to \$350,000. As an outlay for this additional fund it was decided to add \$75,000 to the indebtedness of the company. The increased capital will be used in extensions and improvements in the mines and tipplers. At the above meeting J. Morton Hall was re-elected president and general manager, and L. M. Chambers secretary and treasurer, to succeed J. A. Smith, who recently resigned.

Norfolk, Va., has been definitely settled upon as the site for the location of the malleable iron works of the Norwood Car Replacer Company.

The Gregg Iron Works at Trumansburg, N. Y., have started up again with an encouraging outlook. The output now includes mowers, reapers, plows, harrows, rakes and a general line of agricultural implements.

C. H. Curtis, for a number of years connected with the Falcon Iron and Nail Company of Niles, Ohio, has recently been granted a patent on an improved sheet-metal lathe. It is stated that this lathe has been examined by several first-class mechanics and architects, and all pronounce it one of the best sheet lathes yet invented. One feature in connection with its manufacture is that when the sheet is produced it has no up or down, right or left, front

or back, but can be applied to the wall in any position desired. For the purpose of putting this metal lathe on the market, Mr. Curtis has severed his connection with the Falcon Iron and Nail Company and taken a position with the Niles Iron and Steel Roofing Company of Niles, Ohio, which firm propose to manufacture the metal lathe and place it on the market. In addition to this the firm propose to increase their capacity by the erection of the necessary machinery for the manufacture of corrugated, crimped and beaded iron. When the improvements and additions now underway are completed, their capacity will be more than doubled.

The American Wheel Company, having works throughout Indiana, Ohio, Michigan and other States, have been placed in the hands of Joshua Fusey, receiver. The liabilities are stated to be nearly \$2,000,000, and the assets double that amount. Altogether there are 12 plants that gave employment to 2500 men. Julius T. Pratt of Indianapolis holds most of the stock.

The Minnesota Iron Car Company, who failed several months ago, has passed into the hands of the Duluth Mfg. Company, a new corporation just formed under the laws of New Jersey, with a capital of \$1,250,000. The works already have orders for 1000 cars.

The Baker Iron Company.

A somewhat novel method of calling for subscriptions for stock has been adopted by the Baker Iron Company of Jasper, Tenn., to the organization of which we referred lately. The company will manufacture field hardware, railroad forgings, mine supplies and bars. The capital stock of \$600,000 is divided into 5000 shares 7 per cent. preferred stock and 1000 shares common stock, par value of \$100. The preferred stock is a 7 per cent. unaccumulative, the common stock taking from the residue 7 per cent., all stock equally sharing in any further balance. When all the stock has paid 7 per cent. per annum of the net earnings for three successive years the common stock shall be redeemed by issuing a similar amount of preferred stock. A land company has been formed, entitled the Jasper City Land Improvement Company, with a capital of \$2,000,000, in \$100 shares, of which a certain number are offered as a bonus in the allotment of preferred stock of the Baker Iron Company. These allotments have been distributed in six series, the first two of 500 shares and the last four of 1000 shares, the bonus in the different series decreasing from four shares of land stock to each share of preferred stock in the first series to one share in the sixth. James H. Baker, in the prospectus, states that 1080 shares of the preferred stock, running through the first three series, have been taken, and that the whole of the common stock of the iron company and 6000 shares of land company stock have been taken by him and his associates. The iron company have acquired the patents and good-will of the Baker Chain and Wagon Iron Mfg. Company of Allegheny, Pa., Mr. Baker having contracted to remain with the company for six years, and having bound himself not to go into any competing business for ten years. The plans of the concern contemplate the erection of a forge building and warehouse at a cost of \$30,000, a chain department worth \$10,500, machine shop at \$12,000, followed by the erection of a foundry, rolling mill, consisting of muck, guide and 9 or 10 inch bar trains. The whole is to cost \$275,000, and there is to be a working capital of \$125,000. The iron company have purchased 1000 acres of coal and timber lands at \$10 per acre.

Boiler manufacturers have been notified by the National Boiler Makers' Union that the union would demand that eight hours should constitute a day's work on and after May 1, 1892. A circular from the employers is said to propose organization for mutual protection.

TRADE REPORT.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 50 Dearborn street, Chicago, August 26, 1891.

Business is unquestionably picking up. A better demand is clearly perceptible in many lines, and the volume of trade is larger than it has been for many weeks. The general market is moving independently of railroad influences, as the demand from that quarter continues disappointingly slow. Railroad traffic is as heavy as was anticipated, but railroad managers evidently do not yet see their way clear to freely order rolling stock and track material, of which they must stand in need. Several Western railroad centers, notably Kansas City, report a heavier grain traffic than ever before known, which overtaxes their facilities. This must lead to an enormous demand for railroad material before long, and when it comes it will be felt for at least a year, and perhaps for two or three years. All indications now point to a period of great activity, which will bring with it prosperity to manufacturers.

Pig Iron.—More business is being done than appears upon the surface. The buying movement is steady and keeps up very persistently. While there is no appearance of activity yet, every furnace company here is able to dispose of its current output and there is no surplus stock pressing upon the market. Some grades of Iron are quite scarce, especially No. 1 Coke Foundry. Anything offered at a little under current prices is quickly absorbed. The low range of prices and their long-continued steadiness have brought about a peculiar condition of affairs. It was formerly the custom of large consumers to ask prices of all the leading sellers, so that all of them were posted on any transactions of importance, but now a consumer fixes upon one or two brands and orders what he wants of them, knowing that it is useless for him to get quotations from others in order to beat down prices. Hence round lots of 1000 to 3000 tons are being bought in a quiet way without creating any stir in the trade. Transactions of this kind are of weekly occurrence. A 2000-ton transaction is now about closed which will hardly be known to more than two sellers until it is consummated. This explanation is called for by the fact that incredulity is often expressed with regard to reports of large sales in this market. Lake Superior Charcoal has stiffened a trifle, and if there are any sellers at \$17 they are making no noise about it now. Quite a number of small trades were made the past week by several houses, and at least one 1000-ton lot was taken. There is a good inquiry from consumers further East, but just now the local demand appears to have been satisfied. If furnace companies were willing to sell for six or more months, beginning in November or December, they could take some important orders, but they are not willing to do so. Southern Coke Iron is fairly firm. Freight rates from the South will be advanced 15¢ per ton after September 1. Quotations are as follows, f.o.b. Chicago:

Lake Superior Charcoal.....	\$17.25 @ \$18.00
Local Coke Foundry, No. 1.....	16.00 @ 16.50
Local Coke Foundry, No. 2.....	15.00 @ 15.25
Local Coke Foundry, No. 3.....	14.50 @ 15.00
Local Scotch.....	16.00 @ 16.50
Ohio Strong Softeners.....	17.75 @ 18.25
Southern Coke, No. 1.....	15.75 @ 16.25
Southern Coke, No. 2.....	15.00 @ 15.25
Southern Coke, No. 3.....	14.50 @ 15.00
Southern, No. 1, Soft.....	15.00 @ 15.75
Southern, No. 2, Soft.....	14.50 @ 14.75
Southern Gray Forge.....	14.00 @
Southern Mottled.....	13.50 @ 14.00
Tennessee Charcoal, No. 1.....	18.00 @
Alabama Car Wheel.....	20.50 @ 21.50
Coke Bessemer..... @
Hocking Valley, No. 1.....	17.00 @ 18.50
Jackson County Silvery.....	17.50 @ 18.00

Spiegeleisen and Ferromanganese.—Sales of Spiegeleisen reported at \$28 for 20%; \$38 for 30%. Ferro is scarce at present and nominally \$70 for 80%.

Bar Iron.—Inquiries have increased to a remarkable extent, and large sales have been made by local manufacturers at better prices. The largest lots have been sold to car builders, but other consumers and some jobbers are also in the market for stock. It would require a very good specification now to shade 1.70¢, Chicago, half extras, while some makers ask 1.75¢. Mahoning Valley makers quote 1.60¢, half extras, at mill, but these holding firmly to that rate have done but little, as their Chicago price would be 1.73¢. A 15¢ freight rate will rule after September 1.

Structural Iron.—Bridge work is a little more active, but not enough to make trade lively. Several good contracts are in sight, among them a large viaduct in this city which is to be let this week. Prices are unchanged, Angles being quoted at higher figures by some mills, but at the old low rates by others.

Sheets.—Mill orders are still coming along, but the makers are so well fixed now that they are not so anxious for new business, and are very firm at 2.95¢, Chicago, for No. 27 common. Jobbers are letting down prices from stock, and 3.10¢ for No. 27 is not an unusual figure. Galvanized Iron has latterly been in strong request and warehouse stocks are depleted. Manufacturers' agents report better prices, and while jobbers still quote 67½ off for Juniata, that is so close to mill rates that an advance seems to be inevitable.

Plates.—The Plate trade is excellent from the standpoint of the dealers, who are having a heavy demand from consumers. Mill agents, however, report a slack business in direct orders, with prices still low. Boiler Tubes are firmer, and buyers are no longer favored with an extra 5% off.

Merchant Steel.—The demand for high grade Tool Steel keeps up well, but trade is less active in other branches, now that season contracts have been generally placed.

Track Supplies.—Steel Rail manufacturers say they are still unable to see much business ahead, but at the same time orders continue to come in, and the local mills are now so well supplied with work that they feel reasonably confident of the future. The heavy traffic assured to Western railroads for the next year or two puts them in admirable shape as compared with this time last year, when crops were known to be light. Quotations are still \$31.50 @ \$32, according to the character of the work. The trade in Fastenings is as dull as it can well be, with quotations at 1.85¢ @ 1.90¢ for Iron Fish Plates, 2.20¢ @ 2.25¢ for Spikes and 2.80¢ @ 2.85¢ for Track Bolts with Hexagon Nuts.

Old Rails and Wheels.—Old Iron Rails are quiet; several lots are offered here at \$23 without takers. Dealers are endeavoring to get \$23.50 in the interior of the State, but consumers bid \$23. Old Steel Rails are nominally worth \$14 @ \$16, but the demand is light. Old Car Wheels have suddenly begun to move; large transactions have taken place at \$15.75 @ \$16, and holders now ask \$16 @ \$16.25.

Scrap.—The decreased local consumption affects trade badly. Transactions are light and prices are nominal. Sellers quote as follows, per net ton: No. 1 Railroad, \$19.50; Mill, \$14.50 @ \$15; Axles, \$23.50; Fish Plates, \$21; Axle Turnings, \$18.50; Machinery Cast, \$12.50.

Metals.—Carload lots of Lake Copper continue to be quoted at 12½¢, and casting brands, 12¢ @ 12½¢. Spelter is lower, and Prime Western can now be had at about 4.85¢. Pig Lead is steady at 4.25¢

@ 4.80¢, with sales of some 400 tons. Dealers regard conditions favorable for a rise; stocks are low.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., August 25, 1891.

Pig Iron.—The report made last week might be repeated again to-day, without changing a word or a figure, and would still represent the market very correctly. Prices don't change, neither do the conditions or the prospects, which are all favorable for improvement. The demand is a little better, the volume of business is larger, and the feeling is hopeful, but there is plenty of Iron to be had at low prices. In saying this, it is not to be understood that the supply is disproportionately large, but it is amply large for current requirements, and that is about all that consumers are providing for. If there should be a speculative run there would soon be an apparent scarcity, but under present conditions supply and demand are evenly balanced, with no loading up by consumers or accumulating by producers, so that the market is in good shape every way. The trade would like to see an improvement in prices, but that can hardly be expected until there is a considerable increase in the demand, and of this there is no immediate prospect. Some of the new brands from Virginia are being worked in at low figures, such as \$16.50, delivered, for No. 1, and \$15.50 for No. 2, and while these figures are no inducement to parties who require favorite brands of strictly choice Iron, it nevertheless keeps in check any movement toward higher prices. For the present the market seems to have settled down to the range of quotations named herewith, varying according to brand, point of delivery, &c., including all locations within 100 to 150 miles south and west of Philadelphia.

Ohio Softener, No. 1x	\$19.00	Q	.....
Ohio Softener, No. 2x	18.00	G	.....
Standard Penna, No. 1x	17.75	G	\$18.00
Standard Penna, No. 2x	16.50	G	16.75
Medium Penna, No. 1x	17.25	G	17.50
Medium Penna, No. 2x	16.00	G	.....
Virginia, No. 1x	16.50	G	17.25
Virginia, No. 2x	15.50	G	16.00
Standard Neutral All-Ore Forge	14.25	G	14.75
Ordinary Forge Cinder mixed	13.75	G	14.00
Hot-Blast Charcoal	20.00	G	22.00
Cold-Blast Charcoal	24.00	G	27.00

Bessemer Pig.—Nothing doing of any importance, nominal quotations being \$16.25 @ \$16.50 at furnace for standard brands, and from \$18 up for specials.

Steel Rails.—The demand is confined to small lots, for which \$30 at mill is given as a firm quotation. There is no change in the general position, and prospects for the near future not very encouraging.

Steel Billets.—Business is not satisfactory to manufacturers. There is a demand for fair-sized lots, but it is difficult to agree upon prices. Sellers quote all the way from \$27 at such points as Harrisburg up to \$27.50 @ \$27.75 at seaboard, but large buyers claim to be doing better than indicated by these figures. There is an undoubted anxiety to sell, and while it is not positively known that less money has been accepted, there is a general impression that desirable orders would be a strong temptation at about 25¢ less than above mentioned.

Muck Bar.—The weakness in Steel is having its effect on prices of Puddled Bar. Sellers asked all the way from \$26.75 to \$27.25, delivered, but it is difficult to get business at these prices, and in some cases inside figures, if bid, would be promptly accepted. There is more pressure to sell than for some time past, and somewhat lower figures appear to be among the probabilities of the near future.

Bar Iron.—Some little improvement in the demand is reported, but at best the market is dull and unsatisfactory. Large

orders are still in abeyance, and the majority of mills are running on a hand to mouth demand, although others report several weeks' work on hand. There is no difficulty, however, in placing orders at 1.70¢ @ 1.80¢ for city deliveries, or 1.65¢ @ 1.70¢ at interior points, but the demand is barely equal to the current output, so that new business is anxiously looked for.

Skelp Iron.—A few small lots have been taken during the week at about 1.72½¢, but the demand does not promise much for the near future, so that prices are barely steady at 1.70¢ @ 1.72½¢, delivered, for Grooved and 1.85¢ @ 1.90¢ for Sheared.

Plates.—Market moderately active, and most of the mills have about all the work they can handle for the next few weeks. Prices are still very low, however, and without any present tendency toward improvement. Asking prices are usually as quoted below, but on good sized orders concessions are easily obtained. In one case sales were at 1.90¢, delivered, for Iron Plate, and 1.95¢ for Steel, but these are extreme figures, with 1.95¢ and 2¢ as the rates more generally prevailing. Ordinary prices for the entire list are as follows (delivered):

	Iron.	Steel.
Tank Plates.....	1.95 @ 2.05¢	2.05 @ 2.10¢
Refined.....	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell.....	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange.....	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box	4.00 @ 4.25¢	3.00 @ 3.50¢

Structural Material.—There are no large orders offering at present, but mills have some old business to finish up, which with the current demand for small lots keeps manufacturers pretty well employed. Prices are nominally unchanged, but Plates can be had on easier terms, although nominal quotations are same as last week, viz.: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 2¢ @ 2.10¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—The demand is improving, and mills are now running quite full, although prices are far from satisfactory. For best makes quotations are about as follows:

Best Refined, Nos. 14 to 20.....	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....	3.10¢ @
Best Refined, Nos. 25 to 26.....	3.20¢ @ 3.30¢
Best Refined, No. 27.....	3.40¢ @
Best Refined, No. 28.....	3.50¢ @
Common, ½¢ less than the above.	
Best Soft Steel, Nos. 14 to 20	3¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24.....	3½¢ @
Best Soft Steel, Nos. 25 to 26.....	4¢ @
Best Soft Steel, Nos. 27 to 28.....	4¢ @
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount....	@ 67½ %
Common, discount.....	@ 70 %

Old Material.—There is not much life or vigor in this department, but for such small lots as buyers require prices are steady, but the market will not bear much pressure. Sales at about the following rates, according to point of delivery: Iron Rails, \$21.50 @ \$22.50; Steel Rails, \$17.50 @ \$18.50; No. 1 Railroad Scrap, \$20.50 @ \$21.50, Philadelphia, or for deliveries at mills in the interior \$20.50 @ \$21.50, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13 @ \$14 for ordinary; \$15 @ \$16 for Wrought Turnings; \$10 @ \$10.50 for Cast Borings, and nominally \$24 @ \$25 for Old Fish Plates, and \$16 @ \$17, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—Market somewhat irregular, both as regards price and demand. There is in some sizes rather more business, but extra discounts are of frequent occurrence when the order is of

some importance. Nominal discounts are as follows:

Butt-Welded Black.....	52½ %
Butt-Welded Galvanized	42½ %
Lap-Welded Black.....	60 %
Lap-Welded Galvanized.....	50 %
Boiler Tubes, 2½ inch and under.....	52½ %
Boiler Tubes, 2½ inch and larger.....	57½ %

Cleveland.

CLEVELAND, August 24, 1891.

Iron Ore.—Dealers as a rule are holding for a 50¢ advance over early season quotations. Nearly 100,000 tons of new Ore have been received during the past week, as compared with 75,000 tons unloaded during the corresponding seven days in 1890. During the same week about 50,000 tons of Ore have gone forward to the furnaces, as against 31,000 tons for the same week last year. The Ore men are undoubtedly proceeding with considerable caution and are sending down very little unsold Ore. Sales of from 2000 to 5000 tons of Ore are occurring almost daily at prices from 35¢ to 50¢ more per ton than was paid for the same Ores two months ago. Lake freights are still fluctuating in a very uncertain way. The Escanaba rate is now 90¢—35¢ more than was paid in May and June; while \$1.10 per ton is paid for bringing Ore from Marquette and \$1.15 from Ashland. The Ore men confidently believe that the furnace men will be obliged to buy something like 1,000,000 tons of Ore before the season closes, and that the advanced rates can be obtained for this amount. The furnace men do not seem particularly anxious as to the result. Many of them are known to have covered their wants. One feature of the Ore situation is commendable—the evident intention of both buyers and sellers to clear away the great stacks of Ore on the lower lake docks. The mine owners are sending forward very little, if any, unsold Ore, while all the surplus output sent down last year is being disposed of at the most advantageous terms. It is probable that the season of 1892 will open with the docks well cleared of old Ores, thus permitting the buyers to anticipate their wants in a comprehensive way. Sales of Hematite Ores at \$4.75 and of No. 1 Specular and Bessemer at \$6, f.o.b. cars Cleveland, are reported.

Pig Iron.—Inquiries are more numerous than they were ten days ago, although the market remains dull, and no great degree of activity is looked for before September, if even then. There was a sale of 5000 tons of special Iron during the past week, but at private terms. The furnace men are well supplied with orders and are not attempting to increase their obligations with new contracts. Every dealer visited to-day took a hopeful view of the future, and said that better prices were sure to prevail before October. The only sales now being reported are confined to carload lots needed here and there for immediate consumption. Local quotations remain as given last week:

Nos. 1 to 6 Lake Superior Charcoal	\$18.50 @ \$19.00
Nos. 1, 2 and 3 Bessemer, per ton.	16.00 @ 16.25
No. 1 Strong Foundry, per ton..	16.25 @ 16.75
No. 2 Strong Foundry, per ton..	15.25 @ 15.75
No. 1 American Scotch, per ton.	16.80 @ 17.00
No. 2 American Scotch, per ton	15.80 @ 16.85
No. 1 Soft Silvery, per ton.....	16.50 @ 17.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton....	14.00 @ 14.50
Mahoning and Shenango Valley Red Short Mills, per ton.....	14.00 @ 14.50

Old Rails.—Not very much business is being done and prices remain steady at \$22.50 @ \$23 for Old Americans.

Scrap.—The market is rather dull this week. No. 1 Railroad Wrought is worth \$19; Cast Scrap; \$13.25 @ \$13.50, and No. 1 Wrought Turnings \$13.50. Old Car Wheels are dull at \$16 @ \$16.50.

Nails.—The market is quiet at last week's prices—\$2.10 for Wire and \$1.70 for Cut Nails in stock.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, August 26, 1891.

Pig Iron.—The volume of business has been comparatively small during the week ending to-day. No large sales have been made, but numerous small ones, few of which reached 500 tons. Yet there is more inquiry at the close regarding 1000 and 2000 ton lots, which may or may not result in sales. It is noticeable that there is less disposition on the part of sellers to contract for long time deliveries, and some proposed contracts running to next July have been refused, but deliveries for any time during the current calendar year are readily granted at current prices. There is a steady, although moderate, demand for Gray Forge; and a good demand for No. 2 Foundry, which is in light supply and for which pretty full prices are readily obtained. For Charcoal Iron there is almost no demand at all, and it is evident that buyers could obtain material concessions on some lots which are urgently offered. There does not appear to be any increase in the melting of Iron by Iron Pipe works, neither do the railroad repair shops indicate by their purchases of Pig Iron that they have greatly enlarged their operations; the fact appears to be that most of the railroads would have cars enough for all practical purposes if they could collect what belongs to them; and they are now bending their energies to accomplish that. For the present the Iron trade is in a quiet condition, but there is confidence in the future of better things, and if weakness crops out here and there, as it will, it must be taken as exceptional.

Foundry.

Southern Coke, No. 1.....	\$14.75 @ \$15.00
Southern Coke, No. 2.....	13.50 @ 13.75
Southern Coke, No. 3.....	13.00 @ 13.25
Ohio Soft Stone Coal, No. 1.....	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2.....	15.50 @ 16.50
Mahoning and Shenango Valley.....	17.00 @ 17.50
Hanging Rock Charcoal, No. 1.....	20.00 @ 21.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1.....	16.00 @ 17.00
Tennessee and Alabama Charcoal, No. 2.....	15.00 @ 16.00

Forge.

Gray Forge	12.50 @ 12.75
Mottled Neutral Coke.....	12.00 @ 12.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	19.25 @ 19.75
Hanging Rock, Cold Blast	25.00 @ 26.00
Lake Superior Car Wheel and Malleable.....	18.00 @ 18.50

Louisville.

LOUISVILLE, KY., August 24, 1891.

Pig Iron.—There has been a slight improvement in the situation, and a somewhat better feeling seems to prevail among consumers, although this is not specially marked, nor can it be attributed to any particular cause, yet there has been a fair amount of trade and a more general inquiry than for the past few weeks. Still, there is nothing to justify any advance in price, and no indication of an improvement until perhaps late in the fall, when, following the buying movement and general activity in Iron circles which it is felt will certainly occur, there is a chance for a slight increase in price. The depression in trade and the stringency in money during the last nine or ten months have had a tendency to cause the larger consumers, who have been in the habit of buying in round lots and for extended deliveries, to look more carefully into their stocks on hand, as well as their contracts for finished material, and to use up more closely the Iron in their yards; and, while they recognize prices as being low enough, they are inclined to let their purchases run more closely in line with what they will need to fill these contracts. This has had the general effect of making small

trade. We quote for cash, f.o.b. cars Louisville:

Southern Coke, No. 1 Foundry...	\$14.50 @ \$15.00
Southern Coke, No. 2 Foundry...	13.75 @ 14.25
Southern Coke, No. 3 Foundry...	13.25 @ 13.75
Southern Coke, Gray Forge....	12.75 @ 13.25
Southern Charcoal, No. 1 Foundry	18.00 @ 17.00
Southern Car Wheel, Stnd brnds	19.00 @ 20.00

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, August 25, 1891.

Pig Iron.—Business continues fairly active, while prices remain unchanged. Furnacemen generally are not particularly anxious to sell. Some of them are refusing to make contracts for future delivery at present prices, which may be fairly quoted as follows:

Neutral Gray Forge.....	\$13.75 @ \$14.00, cash.
White and Mottled.....	13.00 @ 13.50,
Al-Ore Mill Iron.....	14.50 @ 15.00,
No. 1 Foundry	16.25 @ 16.50,
No. 2 Foundry	15.25 @ 15.50,
No. 3 Foundry.....	14.75 @ 15.00,
No. 2 Unrecoal Foundry	21.00 @ 21.50,
No. 1 Charcoal Foundry.....	22.00 @ 22.50,
Cold-Blast Charcoal.....	25.00 @ 27.00,
Bessemer Iron.....	15.75 @ 16.00,

Sales of Bessemer Iron reported here at \$16, cash, and at Wheeling at \$15.80 Mill Iron sold at \$14, cash, delivered, equal to \$13.75 at city furnace. Nearly all Iron sold by city furnaces is delivered to city consumers, and the cost of transportation is about 25¢ per ton.

Muck Bar.—There was rather more inquiry the past week, but no improvement in prices, which, if anything, are weaker, sales having been reported at prices ranging from \$26.25 to \$26.75. There is not the demand there was at the corresponding time one year ago.

Manufactured Iron.—An increasing demand is reported, and some of the mills have about all they can do. In addition to the regular Merchant-Iron trade, which is also improving, the railroads are free buyers, and those mills making a specialty of railway supplies are very busy. The railroads did not commence buying this year until it was late. They are now taxed up to their fullest capacity in moving the crops. A great many new cars and locomotives have been contracted for, which, of course, will require large quantities of Iron and Steel. There has been a great demand for Agricultural Implements, and manufacturers are also large buyers of Iron. Prices remain unchanged. We quote city made Iron at 1.70¢ @ 1.75¢ for Bars; 2 10¢ @ 2.15¢ for Plate and Tank, and 2.75¢ @ 2.80¢ for No. 24 Sheet, all 60 days, 2% off for cash. Skelp Iron is quoted at 1.65¢ for Grooved and 1.90¢ for Sheared, four months, 2% off for cash.

Nails.—There is more inquiry, and with only two factories running in the Wheeling district, a somewhat firmer feeling obtains. Some of the factories in the district noted are stopped, while others are waiting for a better market, as it appears to be generally conceded that there is nothing in the business for the manufacturer at present prices, which we continue to quote at \$1.55 @ \$1.60 for 30 average, 60 days, 2% off for cash, f.o.b. at factory. We stated in our report of last week that sales of Wire Nails have been made for September delivery at \$1.85; there are no more to be had at that price. We now quote \$1.90, f.o.b. at factory, as bottom price, and then only for desirable orders. It is generally conceded that the consumption of Wire Nails is on the increase, and it is evident that they are supplanting the Cut Nail, although some of the Cut Nail manufacturers contend that in time the Cut Nail will again come to the front.

Structural Material.—The demand for almost everything in this line continues on the increase, and those mills making a specialty of the same are now very busy. Notwithstanding the recent labor compli-

cations there are a good many large buildings in process of construction, and there are also a good many bridges being built and a good many more pending. Prices remain unchanged, but they are firmer, and an advance in the near future is not improbable. Channels and Beams, 3.10¢; Sheared Bridge Plates, 2.15¢ @ 2.20¢; Angles, 2¢; Tees, 2.60¢; Universal Mill Plates, Iron, 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

Steel Plates.—The dullness noted for some time past continues, and there is scarcely enough doing to establish prices, which are nominal. Fire Box, 3.90¢ @ 4.25¢; Tank, 2.10¢; Shell, 2.35¢; Flange, 2.55¢. Manufacturers are hopeful that there will be some Government contracts on the market before long, but there does not appear to be much prospect of the same at present.

Barb Wire.—There is no change in the syndicate price in this district, as follows: Painted, \$2.75 in car lots and \$2.80 for less; Galvanized, \$3.25 in car lots and \$3.30 for less, f.o.b. at makers' works. Prices are not the same in other districts as in this one, and there are ten different districts in the country, but the Columbia Patent Company, at Chicago, are the head center of all.

Merchant Steel.—There is a freer and increasing business, but no change in prices, which we continue to quote as follows: Crucible Tool Steel, 6¢ @ 7¢; do. Spring, 4¢; do. Machinery, 4¢ @ 5¢; Bessemer Spring Steel, \$2.50; do. Machinery, 2.40¢ @ 2.50¢; do. Toe Calk, 2.50¢; Tire Steel, 2.20¢; Steel Bars, 1.80¢ @ 1.85¢ rates, full extras. It may be noted that an increased demand for Steel Bars is reported, and it is evident that for some purposes they are supplanting Iron.

Wire Rods.—There have been no sales reported for a considerable time, in the absence of which we continue to quote at \$30 @ \$36.50, cash, at makers' mill.

Ferromanganese.—Domestic 80% in small lots for immediate and near-by delivery still quoted at \$66.50, cash. We can report a sale of 500 tons at \$66, cash. No sales of foreign reported; it cannot be sold here in competition with domestic.

Old Rails.—There is considerable inquiry for Old Iron Rails, and but few offering; the inquiry comes chiefly from consumers in the Shenango and Mahoning Valley districts; we can report a sale of 2000 tons deliverable at Youngstown at \$23.25. There appears to be little or no demand for Old Steel Rails for the present.

Billets and Slabs.—There has been considerable business in Billets the past week, with sales aggregating some 10,000 tons reported, at prices ranging from \$25.10 to \$25.25 at makers' mill and \$25.50 @ \$25.75 delivered at works of buyers within city limits. It is said by those in a position to know that there is very little margin for profit at present prices.

Steel Rails.—There is a fair degree of activity, but business is not what it was at this time last year; however, there is liable to be an improvement as the season becomes more advanced. We continue to quote at \$30, f.o.b. at mill.

Wrought Iron Pipe.—There is a fair business, but it is not up to what it usually is at this season of the year, when the mills are ordinarily very busy, which does not appear to be the case at present. However, there is time enough yet for improvement. Prices, unchanged, as follows: Discounts on Black Butt Pipe, 52½%; on Galvanized do., 42½%; on Black Lap, 62½%; on Galvanized do., 50%; Boiler Tubes, up to 2½-inch inclusive, 55%; 3 to 6 inch inclusive, 60%; 7-inch and larger, 55%; Casing, all sizes, 55%.

Railway Track Supplies.—There is a continued good demand, and mills making a specialty of this class of work have about all they can do. Some of them have difficulty in keeping up with orders. Prices remain unchanged. Spikes, 2.15¢, f.o.b. at makers' works, 30 days; Splice Bars, 1.75¢ @ 1.85¢; Track Bolts, 2.75¢ with Square and 2.85¢ with Hexagon Nuts.

Old Material.—There is considerable inquiry for No. 1 Wrought Scrap, with sales of 700 tons reported at \$19.50 @ \$19.75 per net ton. Other kinds in fair request at former prices. Steel Bloom and Rail Ends at \$17.50, gross ton.

Connellsville Coke.—There is a continued steady demand at unchanged prices. Furnace Coke, \$1.90; Foundry Coke, \$2.30; Crushed, \$2.65, all per net ton, f.o.b. cars at ovens.

The partnership heretofore existing between Isherwood & Meehan, proprietors of the Lawrence Coal and Scrap Iron Company, at Pittsburgh, was dissolved on the 15th inst. The business will be carried on under the same firm name and at the same place by Robt. Isherwood.

The offices of the American Tube and Iron Company, formerly located at 107 First avenue, Pittsburgh, have been removed to the Monongahela House, corner of Smithfield and Water streets in that city.

St. Louis.

Office of *The Iron Age*, 214 N. Sixth st., St. Louis, August 24, 1891.

Pig Iron.—During the past week the market has shown extreme dullness. The activity of the week preceding seems to have been a temporary spurt, and things are as dull to-day as could well be imagined. Furnaces are willing to sell at prices that would have been considered ruinously low three months since, but now are thought to be fairly satisfactory. The large buyers seem to be well supplied with Iron, and those whose orders never average over 100-ton lots are negotiating for the usual quantity, but even to-day's prices do not seem to them to be low enough. What their ideas of low prices are is difficult to determine, but it seems unreasonable to suppose that they can do much better than at the prices quoted herewith. Furnaces appear willing to accept any reasonable offer, but even this action on their part does not seem to stimulate trade to any extent. During the week under review but few sales were reported, and they were for small quantities for prompt shipment. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	\$15.50 @ \$15.75
Southern Coke, No. 2 Foundry,	14.50 @ 14.75
Southern Coke, No. 3 Foundry,	13.75 @ 14.00
Gray Forge.....	13.00 @ 13.25
Southern Charcoal, No. 1 Foundry.....	17.00 @ 17.50
Southern Charcoal, No. 2 Foundry.....	16.50 @ 16.75
Missouri Charcoal, No. 1 Foundry.....	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry.....	15.00 @ 15.50
Ohio Softeners.....	17.50 @ 18.75

Old Rails.—There is considerable inquiry for Old Iron Rails, and but few offering; the inquiry comes chiefly from consumers in the Shenango and Mahoning Valley districts; we can report a sale of 2000 tons deliverable at Youngstown at \$23.25. There appears to be little or no demand for Old Steel Rails for the present.

Barb Wire.—This department is experiencing a dull period. Farmers are too busy with their crops to pay much attention to fence building, and the demand has fallen off materially since our last report. Mills are working full time, how-

ever, and the dullness is thought to be temporary. The following prices adopted by the Columbia Patent Company prevail: Carload lots of Painted, 2.85¢; Galvanized, 3.35¢; less than car lots 5¢ per cwt. additional. Terms 30 days, or 2% discount for cash within ten days from date of invoice.

Wire Nails.—There is no change to report in this connection. The demand continues light and prices are nominally unchanged. We quote as follows: Carload orders are taken at 2.15¢; small orders from store, 2.25¢.

(By Telegraph.)

The Pig Lead market continues in much the same condition as last noted. Operators do not seem able to get together, and the few sales that are reported are small lots for prompt shipment. For September delivery 4.20¢ is quoted, but at this figure little or no business is doing. Spelter is weaker than a week ago. There is absolutely no demand, and offerings are made at 4.65¢ for September delivery. The extreme dullness in the Iron trade has a depressing effect on Spelter, and until some improvement is noted in the former the Spelter market is not likely to show much change for the better.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date August 24, say: Notwithstanding the fact that inquiries for Iron are received from widely-separated localities and for larger quantities, some of which result in business, there is still a feeling of hesitation on the part of a large number of consumers, not so much on account of doubts of future business, but on account of their fears as to stringency in the money market. It seems reasonable that while such a large proportion of business men are so carefully making preparations for such a stringency, for this reason, if no other, it is not likely to occur. There has been the general run of orders for lots ranging in amount from carloads up to 300 tons, but occasionally a larger order is received. Lake Superior Charcoal is most in demand, with first-class Ohio Softeners next. Southern Irons are holding their own, but the majority of the orders are for limited quantities and reasonably prompt deliveries. We repeat our quotations of last week:

Lake Superior Charcoal, all numbers.	\$18.00 @ \$18.50
Lake Superior Coke, Bessemer.	17.75 @ 18.50
Ohio Blackband (40 per cent.).	18.00 @ 18.50
Lake Superior Coke Foundry, all ore.	17.50 @ 18.00
Southern No. 1.	16.25 @ 16.50
Southern Gray Forge.	14.00 @ 14.50
Jackson County (Ohio) Silvery.	18.00 @ 18.50

Imports.

Hardware, Machinery, &c.

Bertram Bros., Mach'y, pkgs., 13
Boker, Hermann & Co., Arms, cs., 41
Botany Worsted Mills, Mach'y, cs., 68.
Carhart & Blanchard, Mach'y, cs., 24
Clark Mill End Co., Mach'y, cs., 2
Curley, J. & Bro., Cutlery, cse., 1
Debrauw, Aymar & Co., Chains, 6
Downing, R. F. & Co., Chains, cks., 21
Field, Alfred & Co., Arms, cs., 44
Frasse, P. A. & Co., Mdse., cs., 4
Godfrey, Chas. J., Arms, cs., 17
Hartley & Graham, Arms, cs., 13
Henderson D., Machine, cse., 1
Hertlein & Schiatter, Mach'y, cs., 3
Hodge, John, Mach'y, cse., 1
Hurlbut, W. W. & Co., Mach'y, cs., 2
Meacham Arms Company, Arms, cs., 43
Oastler, W. C., Mach'y, pgs., 13
Schoverling, D. & G., Arms, cs., 34
Sheldon, G. W. & Co., Arms, cs., 6
Sumner, Chas. F. & Co., Mach'y, cs., 72
Tryon, E. K., Arms, cs., 2
Van den Toorn, Arms, cs., 27
Werleman, H., Arms, cs., 38
Wiebusch & Hüller, Arms, cs., 13
Order—Mach'y, pkgs., 8; cs., 72

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, August 26, 1891.

American Pig.—So far as Foundry Irons are concerned, the New York market has shown very little activity during the past week. The slackness of the Rail trade is telling heavily on the tone of the market in Bessemer Pig Iron: thus a lot of 1000 tons, tidewater delivery, was sold during the past week for open-hearth purposes at a very low figure. Northern brands are quoted at \$16.75 @ \$18 for No. 1; \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Irons sell at \$16 @ \$17 for No. 1; \$15.25 @ \$16 for No. 2; \$15.50 @ \$16 for No. 1 Soft, and \$14 @ \$14.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—

In Spiegeleisen the stagnation continues. There have been some sales of round lots of foreign Ferro at prices equivalent to \$66 Pittsburgh, or \$63.50 tidewater. The arrangement between the foreign producers and the leading American makers seems to be in full operation, while the details of it are not known. The fact that all the foreign makers quote the same price is evidence of co-operation among them, while it is stated that this market has been divided between the foreign and the American works, the former taking the Eastern and the latter the Western trade.

Billets and Rods.—Sales aggregating 8000 tons of foreign Basic Billets are reported, the greater part thereof being required for re-export Wire trade. The exact prices at which these transactions were closed are not given, but they are stated to have been in the vicinity of \$31.50 for New York delivery and a somewhat higher figure for Boston delivery. In domestic Billets very little business is recorded, but there are rumors of low offerings of Western stock. We quote domestic Wire Rods \$37.75 @ \$38 at tidewater.

Steel Rails.—Stagnation in the Rail market continues, business being still confined to purchases of small lots of Light Rails. While the outlook for the immediate future is certainly disheartening, the prospects for the fall and winter indicate a considerable betterment. A gentleman whose connections with the Rail trade lead him to be a close observer of the requirements of the railroads reports that one of the great Eastern trunk lines is soon about to place a round order, that business is beginning to shape in the West, and that the concern with which he is connected is preparing for a busy winter. The price continues unchanged at \$30.75 @ \$31 at tidewater.

Manufactured Iron and Steel.—Prices in all lines of Manufactured Iron and Steel are exceedingly low and have as yet shown no improvement whatever. The amount of business coming up locally is satisfactory, however. We may note that the Cataqua Mfg. Company are again rolling their well-known Bars and Plates. We continue to quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.95¢ @ 2.15¢ for Tank; 2.3¢ @ 2.6¢ for Shell, and 2.5¢ @ 2.7¢ for Flange, on dock. Bars are 1.7¢ @ 1.9¢, on dock.

Old Material.—Buyers and sellers are far apart on Old Steel Rails. The best offer obtainable for a lot of 600 tons was \$17.50, delivery to a mill in Northern New York, equivalent to \$15.75 on cars on line of road. In Old Rails the market is lifeless, and very little is doing in Scap.

The strike for recognition of the Amalgamated Association of Iron and Steel Workers at the different mills is virtually over. The men have been defeated.

Financial.

Stimulated by continued favorable crop news at home and abroad and growing confidence in monetary circles, speculation has revived on the Produce and Stock exchanges, attended with large transactions at advanced prices, but just now there is a temporary lull "to gather in the profits." The sales of wheat on which to collect commissions aggregated for six days no less than 68,000,000 bushels, and on Saturday the price was full 16¢ higher than it was a fortnight before, and corn sold at an advance of 11¢, while rye indicated a still more radical change, the price going up to \$1.02, an advance of 18¢. New York cleared 2,710,437 bushels of wheat last week, besides 101,360 barrels and sacks of flour. The clearances of wheat and flour from the Atlantic seaboard for the same time were equal to not far from 7,000,000 bushels of wheat. Paris was 10¢ @ 30¢ higher. The cash demand for export, however, has fallen off. Apprehensions were already expressed that the outgo might be checked by the greed of speculators and the opportunity be lost. Corn and oats alike declined, owing to larger receipts. Kansas City reports the elevators full and 2300 cars unloaded at that point. The Cincinnati *Price Current* reaffirms its estimate of 585,000,000 bushels of wheat in this country, and places the probable yield of corn at 1,900,000,000 bushels. One good effect is seen in the improved credit of Western institutions, and, in our local market, a better demand for bonds. The wheat harvest has progressed without interruption and corn is doing remarkably well. At the same time Europe's deficiency becomes more apparent.

On the Stock Exchange there was more irregularity and more disposition to sell, partly explained by a better demand for money, although it was asserted that on and after September 2 there would be no lack, as about \$25,000,000 would be disbursed by the Treasury in paying for 4½% bonds presented for redemption. The feature toward the close of the week was a sharp advance in Sugar Refiners', National Cordage and Lead Trust. On Saturday these stocks led the list upward in the early trade, but the loss of reserve shown by the bank statement caused heaviness at the close. On Monday call loans were bid up to 6%, affecting the market.

State bonds were quiet. Alabama class A sold at 101, and Tennessee settlement 5s at 100. District of Columbia 3-65s coupon were dealt in at 113. Government bonds were strong and higher for the 4s, which advanced + @ + %.

Quotations are as follows:

U. S. 4½s, 1891, registered.....	100%
U. S. 4½s, 1891, coupon.....	100%
U. S. 4s, 1907, registered.....	117½
U. S. 4s, 1907, coupon.....	117½
U. S. currency 6s.....	100

The Secretary of the Treasury issued the following circular in regard to the 4½% loan: "Public notice is hereby given that the United States Assistant Treasurer at New York has been authorized to pay on presentation at his office on and after September 2, 1891, with interest to maturity, the coupon bonds for the 4½% loan called for redemption on that date by the circular of July 2, 1891." The bank return for the week shows a decrease of \$8,507,425 in reserve, which now stands at \$14,109,800 surplus. Loans expanded \$1,375,300. Specie decreased \$1,990,300; legal tenders decreased \$2,229,100, and deposits decreased \$2,847,900. The firmer tone for money was in part due to speculation on the Stock Exchange. Time loans for short dates were offered at 4 and 5%. The rate for from three to six months remained at 6%. New York banks shipped to the country during the week nearly \$4,000,000.

Sterling exchange is weak, commercial bills being in better supply. Posted rates are \$4.84@ \$4.87 Bar silver closed in London at 45 $\frac{1}{2}$ d. per ounce. The commercial price of bar silver in New York was .98 $\frac{1}{2}$ per ounce.

The general markets show rather more animation. Southern trade is slow, but buyers from other quarters are now coming freely. Some of the dry goods merchants were compelled to take notice of the bearing of the new Anti-Trust law which went into operation in Illinois on July 1, under which attorneys in that State advise their clients that it is now illegal to contract to sell goods at card or protection prices, and that they are released from the payment of goods so sold to them. Coffee is weak and trading light. In cotton good crops have a bearish tendency. Provisions are depressed. Refined sugars of the lower grades are 1 $\frac{1}{2}$ ¢ off. Collections are easier.

The clearings of 60 cities for the week ending August 22 showed a decrease of 10.6%. Outside of New York the decrease was 2.8%. New York decreased 15.7, Boston 13.3, Philadelphia 14, San Francisco 13, Kansas City 18.2, Omaha 36.2, Denver 26.4, Seattle 47.3 and Sioux City 1.3. Chicago increased 10.4%, St. Paul 3.2, Galveston 236, Dallas 6.9, Tacoma 17.9, Los Angeles 80.2 and Montreal 3.1.

A strike on the Lake Erie and Western Railroad system is deranging the freighting business through a large section of country. To remedy the matter some of the leaders are required to appear before the United States courts at Indianapolis to answer an order restraining them from interfering with traffic.

Metal Market.

Pig Tin.—No radical changes have taken place during the past week. The natural bearing of heavy importations latterly seems to have been offset in a good measure by the manipulations of speculative operators here and a convenient adjustment of London quotations that facilitated sales to the out-of-town trade at prices very close to those on the Metal Exchange. Outside speculative interest in the metal does not increase to the slightest extent, however, and the buying for trade account is still conducted on very conservative lines, leaving the principal holders a considerable load to take care of. Trading in futures has been chiefly in August and September delivery at 20.05¢ and October at 20.10¢. Higher cables on Wednesday had the effect of imparting greater strength to the market, bringing bids up to 20.10¢ for spot and September delivery, and 20.15¢ for October and November. For jobbing quantities 20 $\frac{1}{2}$ ¢ @ 20 $\frac{1}{2}$ ¢ was quoted.

Copper.—Lake Superior Ingots are at present quoted firm at 12 $\frac{1}{2}$ ¢. As to the position of the leading producer there is some doubt at the moment, but the supposition is that enough of current and near future output is under the control of orders to check any pressure to sell. Other Lake concerns are represented as being well sold up and indifferent to all orders at below the price above quoted. For that matter, one firm claims to have been unable to put through orders for 500,000 lb at 12 $\frac{1}{2}$ ¢ for near future delivery. In Casting Copper no further important transactions have taken place, but the demand is said to be very fair and prices, to all accounts are firmer. The very lowest price now quoted is 11 $\frac{1}{2}$ ¢, while 11 $\frac{1}{2}$ ¢ @ 11 $\frac{1}{2}$ ¢ is claimed to be a more accurate reflection of present market value.

Lead.—Consumers have been buying more freely, and it is estimated that they have taken at least 1000 tons during the

past week for delivery up to the end of September. The purchases were chiefly at 4.45¢ @ 4.47 $\frac{1}{2}$ ¢, but some single car-load lots have been placed at 4 $\frac{1}{2}$ ¢. There is some demand for October delivery, but buyers are reluctant to sell except at advanced prices, owing to a belief that consumers have yet to purchase considerable stock to tide over their wants during the next two months, a usually active period.

Spelter.—The market has been somewhat unsettled during the week, and is so at the present time, under the influence of free offering by one or two smelters. Of one Western brand sales have been made at 4.92 $\frac{1}{2}$ ¢ @ 4.95¢, and while 5.05¢ upward is asked for recognized prime, over 5¢ is apparently the exception where car-load lots are involved.

Antimony.—Outside of the routine jobbing movement there has been little doing, and prices are still unsettled, with a leaning in buyers' favor. Hallett's is quoted at 10 $\frac{1}{2}$ ¢ @ 10 $\frac{1}{2}$ ¢, LX at 10 $\frac{1}{2}$ ¢ @ 11¢, Portuguese (99% pure), at 11 $\frac{1}{2}$ ¢ and Cookson's at 12 $\frac{1}{2}$ ¢ on the spot.

Tin Plate.—There has been a very fair movement in spot goods and some purchases of futures are also noted, making altogether quite a good business for the week. Prices show no radical change, but are higher in some instances, with the tone of the market fairly strong. We quote: Coke Tins—Penlan grade, IC, 14 x 20, \$5.45; J. B. grade, do., \$5.45; Bessemer do., \$5.45; Siemens Steel, \$5.55; Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85 @ \$6; IX basis, \$6.85 @ \$7. IC Charcoals—Melyn grade, \$6.50; for each additional X add \$1.50; Allaway grade, \$5.90; Grange grade, \$6; for each additional X add \$1. Charcoal Ternes—Worcester, 14 x 20, \$5.75; do., 20 x 28, \$11.25; M. F., 14 x 20, \$7.50; do., 20 x 28, \$15.50; Dean, 14 x 20, \$5.25; do., 20 x 28, \$10.50; D. R. D. grade, 14 x 20, \$5; do., 20 x 28, \$10; Mansel, 14 x 20, \$5.12 $\frac{1}{2}$; do., 20 x 28, \$10.10; Alyn, 14 x 20, \$5.15; do., 20 x 28, \$10.30; Duffryn, 14 x 20, scarce; do., 20 x 28, \$10.75. Wasters—S. T. P. grade, 14 x 20, \$4.80; do., 20 x 28, \$9.70; Abercane grade, 14 x 20, \$4.80; do., 20 x 28, \$9.80.

The division of Mining Statistics and Technology of the United States Geological Survey, David T. Day, chief, and C. Kirchhoff, agent, has issued a preliminary statement of the production of Lead in the United States. The following are the figures:

Year.	Total production.	Desilverized	Non-argentiferous
1885	129,412	107,437	21,975
1886	135,029	114,829	20,800
1887	160,700	135,552	25,148
1888	186,555	151,465	20,000
1889	182,967	133,700	29,258
1890	161,754	130,408	31,351
First half of 1891	95,121	70,301	15,820

Producers carried on January 1, 1891, a stock of 10,389 net tons, as compared with 7715 net tons on January 1, 1890. The Lead contents of the ores imported from Mexico was 26,570 tons in 1889 and 18,124 tons in 1890.

New York Metal Exchange.

The following sales are reported :

THURSDAY, August 20.
75 tons Tin, August..... 20.05¢
100 tons Tin, August..... 20.00¢

FRIDAY, August 21.
40 tons Tin, October..... 20.10¢
30 tons Tin, September..... 20.00¢

SATURDAY, August 22.
25 tons Tin, spot..... 19.95¢

MONDAY, AUGUST 24.
20 tons Tin, September..... 20.05¢
25 tons Tin, October..... 20.10¢

TUESDAY, August 25.	
10 tons Tin, August.....	20.05¢
(Seller's right to double, one day's notice.)	
50,000 lb Lake Copper, spot.....	12.20¢
50,000 lb Lake Copper, September.....	12.20¢
50 tons Tin, September.....	20.00¢
50 tons Tin, December.....	20.25¢
75 tons Tin, October.....	20.20¢
25 tons Tin, November.....	20.20¢

Coal Market.

The Anthracite Coal market is dull and weak, the effect of the last advance being scarcely apparent. From outside sources it is reported that Free-Burning Coal can be bought about 25¢ below the circular rates. The operators are hopeful of an improved tone before the month goes out. For the week ending August 15 the output of the three mining regions was 723,000 tons, the Wyoming district supplying nearly one half the amount, which falls slightly behind the shipments for the corresponding week last year. The total since January is 23,280,836 tons, an increase of nearly 3,000,000 compared with 1890.

A New Haven dispatch says coastwise freights have dropped to 40¢ a ton, owing to the introduction of the new coal barges just put in the service, and that a large fleet of vessels is laid up at Boston, their captains refusing to renew charters at the reduced rate. At other points vessels are laying up.

As the week closes the Anthracite Coal agents note a better feeling and rather more inquiry. None but inferior brands can be bought as low as June prices, and by September 1, when the new circular takes effect, the expectation is that full prices, as arranged a fortnight ago, will be realized. All deliveries on and after September 15 will be at the advance, old orders not filled at that time to be canceled. Lehigh small sizes are higher than a few days ago, Pea being quoted \$2.15 @ \$2.85, according to quality, and Buckwheat \$1.65 @ \$1.80. Stove is \$4.

Bituminous Coal is quoted \$3.25 @ \$3.50, the former the minimum. Lack of cars is likely to retard deliveries later on, as some embarrassment is already felt.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, August 26, 1891.

Business in Pig Iron warrants has been inanimate. Prices have not varied more than 6d. during the week, and stocks in Connal's stores have varied but slightly. The totals are now 501,000 tons Scotch and 152,000 tons Cleveland. The bulk of the supply of Scotch warrants is held firmly by the London syndicate, and it is difficult to buy for prompt delivery except at higher prices, although 72 Scotch furnaces are now in blast. Hematite warrants have weakened somewhat, owing to lack of demand consequent upon dullness in the Steel trade. Latest sales of warrants were at 47/ @ 47/1 for Scotch, 39/6 for Cleveland and 48/ for Hematite.

Edington & Sons, pipe founders, at Glasgow, have failed, with liabilities of £50,000.

Better prices early in the week brought out freer sellers of Pig Tin, and prices eased off somewhat but there has since been a reaction on prompts, due to small spot stocks, the greater portion of which is in strong hands. Outside speculative interest is very moderate.

Copper has been rather quiet during the greater portion of the week, and prices have ruled irregular under the influence of manipulation by the bear party, who endeavored to depress the market with making extensive sales, owing to supposed weakness of some holders and the uncertain future of the market. The future of prices appears to depend greatly upon American supplies, which have recently been larger than expected. Any lessening of supply from that quarter would probably strengthen the market. Demand from consumers is moderate.

The Tin-Plate market has been steady. Small orders from San Francisco and the Continent have been plentiful, but these are insufficient to absorb the output. Orders from Atlantic ports are confined to trifles in special sizes. Makers are confident of the future, and new mills are being laid out.

Scotch Pig Iron.—Demand for makers' Iron continues moderate and prices are weak, with a downward tendency.

No. 1 Coltness,	f.o.b. Glasgow	58/6
No. 1 Summerlee,	"	57/6
No. 1 Gartsherrie,	"	57/6
No. 1 Langloan,	"	58/6
No. 1 Carnbroe,	"	49/
No. 1 Shotts	at Leith	59/6
No. 1 Glengarnock,	Ardrossan	58/6
No. 1 Dalmellington,	"	50/6
No. 1 Eglington,	"	49/6

Steamer freights, Glasgow to New York, 2/ Liverpool to New York, 10/.

Cleveland Pig.—There has been rather more business, and makers are firmer at 39/6 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—No improvement in the demand is noted and prices are barely steady at 49/ @ 49/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Splegeleisen.—Sales are small and the demand is light. English 20% quoted at 95/, f.o.b. shipping port.

Steel Rails.—Prices about as they were last week and the market quiet. Heavy sections quoted £4. 5/, and light sections £4. 15/ @ £5. 15/, f.o.b. at N. W. England shipping point.

Steel Blooms.—The demand continues slow. Makers quote £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Dealings are still light and prices in buyers' favor. Bessemer, 2½ x 2½ inches, quoted at £4. 7/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—Only small sales making and prices without change. Bessemer quoted at £4. 7/6, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Business is moderate and prices are without change. Tees quoted at £2. 17/6 @ £3 and Double Heads £3 @ £3. 2/6, f.o.b.

Scrap Iron.—Prices as before and the demand moderate. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—The market dull and unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Tin Plate.—Trade slow and prices somewhat irregular. We quote, f.o.b.

Liverpool:

1C Charcoal, Alloway grade	.....	14/0 @ 15/6
1C Bessemer Steel, Coke finish	.....	13/6 @ 13/9
1C Siemens	" "	13/9 @ 14/
1C Coke, B. V. grade	.....	13/3 @ 13/6
Charcoal Terne, Dean grade	.....	13/ @ 13/3

Manufactured Iron.—There is only a moderate business passing, and prices are still in buyers' favor. We quote, f.o.b. Liverpool:

	£ s. d.	£ s. d.
Staff, Marked Bars	.....	8 10 0
" Common "	6 10 0	8 12 6
Staff, Blk Sheet, singles	.....	7 0 0
Welsh Bars (f.o.b. Wales)	5 10 0	5 12 0

Pig Tin.—The market firm at the close, particularly for prompts. Straits quoted at £92, spot, and £91. 17/6 for three months' futures.

Copper.—Market firm at the close, and fairly active. Merchant Bars quoted at £52. 15/, spot, and £53. 5/, three months' futures. Best Selected, £56 @ £57.

Lead.—Prices a shade lower and the market dull. We quote at £12 for Soft Spanish.

Spelter.—Business slow and the market weaker, at £23. 5/ for ordinary Silesian.

Sherman on Silver Coinage.

The effects of free silver coinage were discussed by ex-Senator Sherman in a recent interview, and he intimated that silver and the tariff would soon be again prominent topics claiming public attention. He is thus quoted:

"But you ask me how free silver would affect the workingman. It would cheapen the purchasing power of his dollar. He could not compete with the merchant and the manufacturer, who could mark up his wares to meet the inflated standard every hour if he choose; while the man who labors would find it very difficult and tiresome if not an impossible task to get his wages advanced to a point that would meet the increased price of every commodity of life upon an inflated basis, and if he did, what better off would he be and how much worse off the country?

"Therefore, the man who is to-day getting \$1.50 a day or \$1.50 for a bushel of wheat would find that under free silver the purchasing power of that \$1.50 would very rapidly drop to \$1.25, and that the 25 cents loss would fall not on the merchant or the manufacturer, but upon the man who labors or who tills the soil. That is the inexorable law of trade, because the price of commodities is fixed by the markets of the world, and cannot be changed by any local legislation or vagaries of any single country. This fact has been demonstrated so often that it seems a waste of time to discuss it. Yet, here we are again loaded with the necessity of demonstrating not only to the people of Ohio, but to the country, that a dollar acceptable the world over for its full face value is essential to the material welfare of any nation."

At this point the Senator took from his pocket a Spanish dollar and said: "Here is the illustration. Intrinsically, not only the Spanish but the Mexican dollar is worth more than the American, and yet everywhere except in their own country these coins are at a discount. That is because they have unlimited coinage, not backed by the only metal the world recognizes as the standard of value. It is a matter as well settled as the rising of the sun that the only way to keep silver on a par with gold is to treat it as a subsidiary coin, or, in other words, to make it the twin with gold, the yellow metal being the stronger child. The moment that unlimited coinage becomes the law of the realm, that moment our silver dollar will lose its purchasing power and become a depreciated coin. Every financial center in this country will feel the effect of this change, and every farmer and laborer will lose from 10 to 20 per cent. of his present income. That is exactly what this cam-

paign in Ohio means this year to the people of this country, and it is well that they should know it and appreciate it."

The fact that President Harrison in some sense regards Mr. Sherman as an adviser in questions relating to the currency gives added weight to his words.

The strike of riveters in Cramps' works in Philadelphia appears to be without justification. A member of the firm said: "The rate of pay of a riveter is \$2 a day, but he works by the piece. For instance, when they drive 206 of a certain kind of rivet, it is a day's work. Frequently they have this done by 11 o'clock in the day. Then they go ahead and make another half day, knocking off at 5 o'clock. If they do the money earned by the riveter and the others in his gang, consisting of two men and a boy, amounts to \$9.22 for the day's work. Riveters, if they work the full time like blacksmiths and other mechanics, could make \$4.25 some days." The work on Government vessels is well advanced. Aside from this fact the contract is such that no forfeit money can be claimed in case of delay from strikes.

Thomas W. Lawton, vice-president of the Grand Rivers Company, Grand Rivers, Ky., has issued a circular to the stockholders in which he presents the present condition of that concern, contrasting it with its status a year ago. During that time the company have built two furnaces, of which one will go into blast in a few days, the second soon following. A number of iron mines have been opened and 35,000 to 40,000 tons are on the dumps. There are now being mined from one tract 300 tons per day, costing less than \$100 per day. There are in the bins 200,000 bushels of charcoal, which cost 4½ cents.

James P. Kelly, general manager of the Kelly Axe Mfg. Company, Louisville, Ky., will be in the city for several days, and may be found at the office of Surpless, Dunn & Alder, 97 Chamber street.

Wm. H. Shields, formerly sales agent in St. Louis for Rogers, Brown & Co., and later occupying the position of foreman of the Anniston Pipe Works, Anniston, Ala., was overcome by the heat at the latter place on the 20th inst., and died the same evening. His remains were forwarded to St. Louis, where his wife resides, for burial. The interment took place Monday, 24th inst., at Bellefontaine Cemetery. Mr. Shields was well known to the trade in St. Louis, and his many friends will sincerely mourn his loss.

The Cornwall anthracite and Bird Coleman furnaces at Cornwall, Pa., have gone out of blast, owing it is said, to the continued depression in the iron trade.

The Johnson Company, Johnstown, Pa., have just installed a 300 horse-power cross compound engine for their electric-welding plant. The engine was built by the Ball Engine Company, Erie, Pa.

The price of natural gas in Pittsburgh has been advanced to 25 cents per 1000 to domestic consumers, or double the charge a year ago. As many will change from gas to coal, manufacturers expect they will have sufficient supplies.

One of the largest pump manufactories in Springfield, Ohio, is to be consolidated with Chamberlain's Plow Works, in Hudson, Mich.

The smoke-consuming device of John Livingstone of Toronto has been successfully adopted in the boiler room of the Detroit Sun.

HARDWARE.

Condition of Trade.

THE PROSPECTS for a favorable fall trade continue to improve. Orders are coming in well for most lines, and manufacturers and jobbers alike are fairly busy. All classes of trade are expecting to share in the advantages of the combination of large harvests and high prices, the only difference in opinion being as to how soon the prosperity which these conditions indicate will reach the trade. The more conservative postpone this time until late in the fall, while the more enthusiastic are looking for a radical improvement immediately. There is so far no talk of advanced prices, nor is there any scarcity of goods, except in the case of seasonable goods, which are expected to be scarce at this time.

Chicago.

(By Telegraph.)

The shelf Hardware trade is still improving, and it has now reached a point where the volume of business is in excess of the corresponding time last year. Orders are running largely to shelf goods, but staple articles are also in better demand, and the prospects now point to a heavier business this fall than ever before known. Houses dealing in specialties also report a larger trade than last year. Stamped Tin ware is in particularly good demand, but margins are now very small and manufacturers state that a positive loss would be experienced if they were running on stock, bought at present prices. Sheet Copper and Brass are still badly demoralized, and lower rates now prevail. Brass Sheets and Tubing are now being sold at net prices to large buyers, the sellers cutting loose from the old list and its discounts. An immense business is being done in Heavy Hardware. The failure of the American Wheel Company made the trade very anxious at first about the supply of Wheels, and outside manufacturers were overwhelmed with inquiries and orders, but the announcement by the receiver that the company's plants will be operated and orders filled promptly had a reassuring effect.

St. Louis.

(By Telegraph.)

The Hardware trade continues to gain in volume as the warm weather disappears. Trade in the West and Northwest is very heavy, but the Southern trade is not up to the standard. This is explained by the low price of cotton, which crop it is needless to explain is the mainstay of the Southern trade. Local business is in good shape and shows a steady increase in comparison with last year. Prices as a rule are unchanged, and with the exception of a few

soft spots, such as Copper and Copper Goods, Wire and Cut Nails, prices are fairly well maintained.

Notes on Prices.

Cut Nails.—This market shows no change during the week. The demand continues moderate and far from satisfactory to sellers, without any change in prices. We continue to quote \$1.60 to \$1.65 for the Wheeling district, and \$1.50 to \$1.55 for the Eastern district, round lots at mill, with the usual 25 or 30 cent average.

Chicago, by Telegraph.—Reports are conflicting as to the condition of trade among manufacturers. Some have been able to fill up with orders for a month or so ahead and have slightly advanced prices, while others are burdened with surplus stocks, which they are endeavoring to unload at cut rates. The weakness of Wire Nails has some effect on Steel Cut Nails. Manufacturers continue to quote \$1.70, Chicago, for a 30-cent average, but this is shaded according to circumstances. Jobbers ask \$1.75 to \$1.80 from stock.

Wire Nails.—The demand continues very large and some important orders have been placed at a shade above the extreme prices that have been named during the past month. Manufacturers seem to have more confidence in making quotations and expect some improvement in prices. We quote, without change, \$1.90 to \$2 at mill for carload lots and \$2.10 to \$2.20 for small lots from store.

Chicago, by Telegraph.—There is a very active demand and large sales are being made, but prices are weak and it is difficult to make a quotation. Some manufacturers still adhere to \$2.05, Chicago, but others are selling at \$2.00 and perhaps lower. The demoralization is ascribed to manufacturers of Barb Wire who also make Wire Nails. The sales of Barb Wire are not up to the usual volume, and as that outlet is guarded by the new selling arrangement their surplus plain Wire is being turned into Wire Nails, with this result. Jobbers quote \$2.10 to \$2.15 from stock.

Barb Wire.—The demand continues moderately active and prices remain steady. Manufacturers are filling orders promptly and the trade seem well satisfied with the new arrangements of the Columbia Patent Company.

Chicago, by Telegraph.—In this branch of trade no change has occurred. The demand is still light, and jobbers quote \$2.80 for Painted and \$3.30 for Galvanized.

Cordage.—While there has been no nominal change in the quotations of makers, the market for Cordage has become very irregular, and sales made have been at cut figures. We revise our quotations to represent jobbers' prices, which can in many cases be shaded.

Fiber Ware.—The Standard Fiber Ware Company, Mankato, Minn., have made some new additions to their list, among which are particularly to be noticed Wash Bowls and Pitchers, which they are now placing on the market. They speak of these as being especially handsome goods at which they have been at work for a good while. The following is their price-list:

	Per dozen.			
	No. 1.	No. 5.	No. 5X.	
Water Pails, 12 quarts	\$4.00	\$4.50	\$5.25	
Dairy Pails (yellow), 14 quart, No. 3	\$4.50		5.00	
Fire Pails, No. 1, \$4.50; No. 2, 14 quart, \$5.00				
Sugar Pails (with cover)	6.00	6.50		
Horse Pails (short, wide and heavy)		5.00		
Buggy Pails (short and light)		4.00		
Prison Pails (with cover)	8.00			
Slop Jars (bal. trap) No. 5 and 5X, 14 quart		8.00	9.00	10.00
Chamber Pails, Slop Pails, Commode Pails, No. 5 and No. 5X, 14 quart		6.50	7.50	8.50
Commode Rings	1.50	1.75	2.00	
Wash Basins, 10½ inch	2.00	2.25	2.75	
" 12 inch	2.25	2.75	3.25	
" 13½ inch	2.75	3.25	3.75	
" 15 inch	3.25	3.75	4.25	
Wash Bowls		4.00	4.50	
Pitchers		5.50	6.00	
Milk Pans (Old Gold)		2.50	3.00	
Fruit Bowls		2.50	2.75	
Keelers, 11½ inch		4.00	4.50	
Waste Paper Baskets, 13 inches high		6.00	6.50	
Mats, 8½ inch (for table use)	1.00	1.25	1.50	
Mats, 15 inch (for cuspidors, &c.)	3.00	3.50	4.00	
Mats, 17 inch (for Slop Jars, Spittoons, &c.)	3.50	4.00	4.50	
Mats, 20 inch (for Slop Jars, Spittoons, &c.)	4.00	4.50	5.00	
Cuspidors, 8¾ inch by 7¼ inches high		8.00	9.00	
Spittoons, "Daisy," 8 inch (pressed)	4.00	4.50	5.00	
Spittoons, 10 and 11½ inch.	6.00	6.50	7.00	
Peck Measures	4.00			
Half Peck Measures	3.50			

Color, Finish, &c.

No. 1 or plain (assorted)—maroon, brown, gray.

No 5 or decorated (assorted)—red, blue, black, brown, maroon, old gold, green, selected, with hand-painted decorations, extra finish or striping, as suits the article.

No. 5X, or white—similar to No. 5, except color.

Stove Boards.—The American Stove Board Company's price-list of Stove Boards for 1891 is the same as their 1890 list, except that Paper-Lined Oxidized Boards do not appear. We give the list in full with the trade discounts, as follows:

Wool-Lined Crystal. Discount, 50 %

No. 70, Round.

In. diam.	27	30	33	36
Per doz.	\$25.20	28.80	32.40	36.00
Each.	2.10	2.40	2.70	3.00

No. 80, Square.

Inches	26x26	28x28	30x30	33x33	36x36
Per doz.	\$24.00	27.00	30.00	33.00	36.00
Each.	2.00	2.25	2.50	2.75	3.00

No. 90, Oblong.

Inches	24x36	26x32	28x34	30x38	32x42
Per doz.	\$27.00	27.00	30.00	33.00	36.00
Each.	2.25	2.25	2.50	2.75	3.00

Wood-Lined Oxidized. Discount, 45 %

No. 10, Round.

In. diam.	27	30	33	36
Per doz.	\$25.20	28.80	32.40	36.00
Each.	2.10	2.40	2.70	3.00

No. 20, Square.

Inches	26x26	28x28	30x30	33x33	36x36
Per doz.	\$24.00	27.00	30.00	33.00	36.00
Each.	2.00	2.25	2.50	2.75	3.00

No. 30, Oblong.

Inches	24x36	26x32	28x34	30x38	32x42
Per doz.	\$27.00	27.00	30.00	33.00	36.00
Each.	2.25	2.25	2.50	2.75	3.00

Wood-Lined Embossed. Discount, 50 %

No. 700, Round.

In. diam.	27	30	33	36
Per doz.	\$25.20	28.80	32.40	36.00
Each.	2.10	2.40	2.70	3.00

No. 800, Square.

Inches.	26x26	28x28	30x30*	33x33*	36x36
Per doz.	\$24.00	27.00	30.00	33.00	36.00
Each.	2.00	2.25	2.50	2.75	3.00

* 32 x 32, list \$31.80 doz., \$2.65 each.

* 34 x 34, " 34.20 " 2.85 "

Paper-Lined Zinc. Discount, 55 %

No. 40, Round.

In. diam.	24	26	28	30
Per doz.	\$12.00	13.20	14.40	16.80
Each.	1.00	1.10	1.20	1.40

In. diam.

Per doz.

Each.

Inches.

Per doz.

Each.

No. 50, Square.

Inches.	24x24	26x26	28x28	30x30
Per doz.	\$14.40	16.80	19.20	21.60
Each.	1.20	1.40	1.60	1.80

Inches.	32x32	34x34	36x36
Per doz.	24.00	27.00	30.00
Each.	2.00	2.25	2.50

No. 60, Oblong.

Inches.	22x34	24x36	26x30
Per doz.	\$19.20	21.60	19.20
Each.	1.60	1.80	1.60

Inches.	28x32	30x36	32x42
Per doz.	21.60	24.00	27.00
Each.	1.80	2.00	2.25

Paper-Lined Zinc Boards are marked according to the sizes of the blanks from which they are made.

Paper-Lined Crystal. Discount, 55 %

No. 100, Round.

In. diam.	24	26	28	30
Per doz.	\$12.00	13.20	14.40	16.80
Each.	1.00	1.10	1.20	1.40

In. diam.

Per doz.

Each.

No. 200, Square.

Inches.	24x24	26x26	28x28	30x30
Per doz.	\$14.40	16.80	19.20	21.60
Each.	1.20	1.40	1.60	1.80

Inches.	32x32	34x34	36x36
Per doz.	24.00	27.00	30.00
Each.	2.00	2.25	2.50

No. 300, Oblong.

Inches.	24x36	26x30	28x32	30x36	32x42
Per doz.	\$21.60	19.20	21.60	24.00	27.00
Each.	1.80	1.60	1.80	2.00	2.25

Paper-Lined Crystal Boards are marked according to the sizes of the blanks from which they are made.

Paper-Lined Embossed. Discount, 55 %

No. 45, Round.

In. diam.	24	26	28	30
Per doz.	\$12.00	13.20	14.40	16.80
Each.	1.00	1.10	1.20	1.40

In. diam.

Per doz.

Each.

No. 55, Square.

Inches.	24x24	26x26	28x28	30x30
Per doz.	\$14.40	16.80	19.20	21.60
Each.	1.20	1.40	1.60	1.80

Inches.	32x32	34x34	36x36
Per doz.	24.00	27.00	30.00
Each.	2.00	2.25	2.50

No. 65, Oblong.

Inches.	24x36	26x30	28x32	30x36	32x42
Per doz.	\$21.60	19.20	21.60	24.00	27.00
Each.	1.80	1.60	1.80	2.00	2.25

* 33x33, list \$25.80 doz., \$2.15 each.

Paper-Lined Embossed Boards are marked according to the sizes of the blanks from which they are made.

Paper-Lined New Tacoma. Discount, 55 %

No. 75, Round.

In. diam.	24	26	28	30
Per doz.	\$12.00	13.20	14.40	16.80
Each.	1.00	1.10	1.20	1.40

In. diam.

Per doz.

Each.

Inches.

Per doz.

Each.

No. 85, Square.

Inches.	24x24	26x26	28x28	30x30
Per doz.	\$14.40	16.80	19.20	21.60
Each.	1.20	1.40	1.60	1.80

Inches.	32x32	34x34	36x36
Per doz.	\$24.00	27.00	30.00
Each.	2.00	2.25	2.50

No. 95, Oblong.

Inches.	24x36	26x30	28x32	30x36	32x42
Per doz.	\$21.60	19.20	21.60	24.00	27.00
Each.	1.80	1.60	1.80	2.00	2.25

New Tacoma boards are marked according to the sizes of the blanks from which they are made.

Glass.—Dullness in the Glass market continues to be the principal feature. Lack of demand has a tendency to keep prices low, though there is a strong feeling that prices will advance. The impression prevails among Glass jobbers and importers that the larger proportion of American Glass works will be in operation by the first week in October. Prices on French Glass are demoralized. Anxiety to make sales by some holders of imported Glass has caused them to make concessions in price, and while nominal quotations remain unchanged, French Glass has doubtless been sold at figures nearly as low as those at which American Glass is quoted.

We are assured that this state of affairs is only temporary, and that the market will regain its former strength. Reports from the English Glass market indicate that business for the past six months has been far from satisfactory, as a comparison with the corresponding period of 1890 shows a decided decrease in the volume of business. While the Glass business is one of the last to feel an improved condition in trade in general, the opinion is expressed that prices are likely to be higher in the future. Printed quotations remain unchanged on the basis of American Window Glass, in carloads, 80 and 10 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 and 5 per cent. discount, with an additional 5 per cent. discount when 50 boxes are ordered and taken in any calendar month. American Plate is held at discount 50, 10 and 5 per cent., and Imported Plate at discount 60 per cent.

Trade Items.

THE IMPROVED PROCESS GLUE COMPANY, Gloucester, Mass., who succeeded at the beginning of the year to the business of the LePage Company in the manufacture of Liquid Fish Glues, paid on the 15th of this month their second quarterly dividend from the profits of the business. The new concern have been successful beyond their anticipations, having a steady demand for their goods and an excellent outlook for the future. The company's New York office is with Tower & Lyon, 95 Chambers street.

FRANK J. SCHOLLHORN of W. Schollhorn & Co. manufacturers of Cutlery, New Haven, Conn., has just returned from a three months' tour in Europe. Mr. Schollhorn alternated business and pleasure while away.

ATTENTION IS DIRECTED to a notice on page 60 of this issue of a large and peremptory trade sale of Hardware, House Furnishing Goods, Stamped Tinned Ware, Edge Tools, Shovels, Spades, &c., by Haydock & Bissell, 12 Murray street and 15 Park place, New York. The sale will

take place on Thursday and Friday, September 3 and 4, beginning at 10 a.m. The entire catalogue will be sold without reserve.

OUR READERS WILL OBSERVE that in their advertisement in this issue Dame, Stoddard & Kendall, Boston, Mass., illustrate their American Acme Pattern Club Skate and Winslow Ice Skates, intimating that catalogues describing these goods will be sent on application.

THE COBURN TROLLEY TRACK MFG. COMPANY, Holyoke, Mass., issue a prospectus in which they propose to recapitalize at \$100,000. The company were organized in 1888, under Massachusetts laws, with a capital stock of \$10,000. The growth of the business makes a larger capital necessary, and stock may be obtained by addressing the company at either Worcester or Holyoke, Mass.

THE MARIETTA MFG. COMPANY, Marietta, Pa., have purchased the plant of the Columbia Agricultural Works and have removed it to Marietta, Pa. We are advised that the capacity of the company has been doubled and that they will hereafter manufacture Blowers, Forges, Tire Benders and Agricultural Implements.

THE STEEL CLIPPER SHIP FALKLAND, 2739 tons register, Captain Roberts, is now rapidly loading at Pier 14, East River, for Melbourne, Australia. Unless earlier dispatched, engagements will be received until September 24, and positively not later.

MERRIAM MFG. COMPANY, Durham, Conn., manufacturers of Stationers' Hardware, &c., have established a New York office at 323 Broadway, where their representative will be in attendance from 11 a.m. to 4.30 p.m. A full line of samples and some new specialties not in their regular catalogue will be displayed, and inducements in prices and quality of goods offered.

EDWARD S. HOTCHKISS, Bridgeport, Conn., is offering to the trade this year, in connection with his other goods, a line of Horse and Barbers' Clippers. We are advised that neither time nor money has been spared in getting out these goods, and they are referred to as equal to any on the market. Mr. Hotchkiss expects to be located in his new factory by September 15, when he will offer another large line of goods, which, with his present assortment, will be represented in a catalogue issued at that time.

THE HOLMES & EDWARDS SILVER COMPANY, 23 John street, New York, are putting on the market Solid Handle Steel Knives, triple plate, cimeter swaged blade, balance handle with round edges, of the medium size. These goods are put up in polished oak boxes, 12 Knives in a box, or in combinations of six Knives and six Solid Handle Forks.

ONE VICTIM of the disaster in Park place last Saturday was John Hollis, driver for Wm. Geary, truckman for Stanley Rule and Level Company, Crane & McKown, J. Russell Company and other concerns in Hardware lines. Mr. Hollis had gone to a restaurant in the ill-fated building for his dinner, and was there when the structure fell. His body was not recovered until Tuesday night, but was easily identified by papers about his person. The face was badly burned, and the arm was raised as if to ward off the heat. Mr. Hollis was an industrious, temperate man, 41 years of age. He leaves a wife and eight young children, whose only support he was. An effort is being made to lighten the affliction of his family by collecting from members of the Hardware trade a sum of money for their immediate needs.

The American Wheel Company.

THE COMMERCIAL WORLD has been surprised by the announcement of the failure of the American Wheel Company. The first indication that the concern was in trouble was the appointment of Noble C. Butler as receiver on Wednesday evening of last week, and the sending to their customers of the following circular by the company:

OFFICE OF

AMERICAN WHEEL COMPANY,
CHICAGO, ILL., August 20th, 1891.

To the Trade.—Owing to the temporary embarrassment of this company, Noble C. Butler of Indianapolis, Ind., has been appointed receiver. The order of the United States Court is for the continuance of our business. Our customers can rely upon having their orders filled promptly, and existing contracts for Wheels fulfilled. We solicit your business and are prepared to serve you satisfactorily.

Yours very truly,

AMERICAN WHEEL COMPANY.

This company were the largest manufacturers of Wheels in the world, having been formed by the consolidation of a large number of the principal manufacturers in the United States. Their collapse may be attributed to the shortsighted policy of their managers in antagonizing all their customers at the outset by the high-handed manner in which prices were advanced and by a general disregard of the interests of the trade. Although this policy was apparently successful for a time, a reduction in prices subsequently was forced upon them by the development of competition and by the attitude of their customers, from which it has resulted that not only their prices have been reduced to what may probably be considered a fair and reasonable figure, but their demand fell off to a very large extent. As they have always owed large amounts of money they were in a particularly bad condition to bear the stringency of the money market, which has been a very important feature in bringing on their failure.

The company have large assets and are in every way equipped to do a large and prosperous business. It is believed by very many persons that they will succeed in overcoming their present difficulties, and it appears certain that if they fail in doing this they will at least be able to pay very creditable dividends to their creditors.

It is believed that the following particulars are correct, being taken from the bill asking for the appointment of the receiver and from statements made by officers of the company:

The company's works are mainly in Indiana, Ohio and Michigan, but it has plants in New York, Pennsylvania and Massachusetts. The company is an Illinois corporation, but has little property in this State. The heaviest stockholders live in Indiana. Noble C. Butler, the receiver, is from Indianapolis, where the principal plants of the company are. Mr. Butler was appointed receiver by Judge Woods of the Northern District of Indiana, and also by Judge Blodgett, the appointment by both judges being considered a legal necessity. Judges in other States named also appointed Mr. Butler.

Julius F. Pratt of Indiana, one of the heaviest of the stockholders and who represents other stockholders whose interests amount to \$1,800,000, applied for the appointment of the receiver. The bill states that the receiver was asked for at the request and for the benefit of all the shareholders. The assets, the bill states, consists of sites, manufacturing plants, machinery and products in various cities in the six States named, distributed as follows:

Indiana.....	\$1,500,000
Ohio.....	1,000,000
Michigan.....	440,000
Pennsylvania.....	220,000
New York.....	85,000
Massachusetts.....	50,000
Illinois.....	10,000
Other assets, accounts, bills receivable, and cash on hand	\$3,305,000
Total.....	\$4,105,000

The liabilities are:	
Bills of exchange, promissory notes, acceptances, &c., and other evidences of indebtedness	\$1,750,000
Further indebtedness for labor.....	50,000
Total liabilities.....	\$1,800,000

The bill states that the company was organized in 1889 with a capital of \$3,000,000. The corporation was organized in December, 1889, the object being to engage in the manufacture and sale of Wheels for all kinds of vehicles, and to that end to purchase, construct, and acquire all necessary sites, plants and warehouses. Business was begun on a large scale, and plants were established at the following points: Indianapolis, Fort Wayne, Terre Haute, St. Mary's, Ind.; Miamisburg, Sidney, Galion, Sandusky and Ottawa, Ohio; Jackson and Kalamazoo, Mich.; West Chester, Pa., and Syracuse and Shortsville, N. Y. The plants at all these places were being operated.

When the business of the company began stock was issued and paid for to the amount of \$2,305,578. With this capital the company erected the above plants and also purchased large amounts of machinery, horses, wagons and drays, and material used in the manufacture of Wheels, and the property is now located in the following cities: Huntington, Mount Vernon, Osgood, Titusville, Auburn and Salamanca, Ind., Lansing, Mich., and Van Wert and Scott, Ohio. All these plants were conducted as one business.

The company found itself under enormous expenses when it had established all its branches, and it was compelled to incur large indebtedness to provide further means for its business. It pledged its credit by promissory notes, bills of exchange, drafts, acceptances, &c., and it purchased material to a considerable extent on credit, all of which indebtedness, together with the amount owing to the employees, is, as above stated, \$1,800,000. The machinery, tools and other apparatus are valued at \$2,040,000; machinery and other supplies, \$1,250,000, and horses, wagons, &c., \$15,000. The value of this enormous property, however, depends largely, the bill states, on the business being continued. The business at all times has been carried on at a profit until a recent period, up to which time the company was able to push the construction of its plants, and no difficulty was experienced in meeting all obligations as they fell due.

It maintained a high credit in commercial circles and was able to largely reduce its aggregate indebtedness and hoped until recently to continue. The last six months, however, has been a period of great stringency in the money market, and the company in consequence was prevented from issuing any part of its unused capital stock, on which it had depended for funds to meet its obligations maturing during the period from May to November. This was the dullest period in the Carriage Wheel business, and to make matters worse, creditors of the company holding accommodation papers became cautious and refuse to renew or extend these obligations, which were secured by the plants of the company. In consequence of this refusal, therefore, and notwithstanding the success of the company, its credit became impaired. It was impossible to obtain renewals, and now it is unable to pay its obligations, which are falling due from day to day and will amount for this month to \$300,000; for September, \$280,000; for October, \$270,000, and November, \$240,000, in addition to which the current expenses of the company must be met, so that the company is compelled to suspend payment of its obligations as they mature.

The monthly receipts the last eight months averaged \$250,000, and for August, September, October and November would be, if continued, \$170,000, while for the ensuing six months there would be a largely increased weekly pay roll of \$12,500 and a salary list for each month for officers and managers of \$12,000, with monthly disbursements for materials and supplies of \$50,000.

Notwithstanding this, however, and during the dullest months, the receipts are in excess of expenses, and the indebtedness the last three months has been reduced \$350,000.

Contracts to the amount of \$1,000,000 have been made, and additional orders have been received covering deliveries for the next year. The 12 plants of the company have a capacity to produce 2000 sets of Wheels daily, and the manufacturers of Carriages and Vehicles are largely dependent on the company for their Wheels, as the company supplies seven-eighths of the entire demand of this country.

The attorney of the company in a published interview is reported as saying:

"Owing to the intense stringency of the money market during the last year the company have been forced to borrow a good deal of money, although the debt was secured and the company have property enough to pay \$2.50 for every \$1 of indebtedness. Yet the officers found themselves pressed for ready

money. Attachment and other legal proceedings were imminent, and as the property was so widely scattered the estate would soon have been dissipated. To head off this disaster the bill was filed and the assets were placed in the hands of a receiver. But an order was entered at the same time allowing business to be continued, and I am sure the embarrassment will last but two or three months. Business will then be resumed, we hope, on the old basis."

"The banks," continued the lawyer, "have cut down their credits one-half, on account of the recent decisions by the Illinois State courts.

"The recent Howell failure is a notable instance of the turn events have taken. The bankers feel now that if a creditor tries to protect them he will be taken into court and his acts declared to have constituted a general or voluntary assignment, under which no preferences are allowed. The banks have awakened to the fact that they can no longer trust a man to protect them in case of trouble."

Price-Lists, Circulars, &c.

PERFECTION MFG. COMPANY, Gloversville, N. Y.: The Perfection Stallion Guard. An illustrated and descriptive catalogue, in which is set forth the advantages of this invention and giving testimonials from those who have had them in use.

UDELL WOODEN WARE WORKS, North Indianapolis, Ind.: Fancy Cabinet Ware, Wooden Ware specialties, Ladders, &c. An illustrated catalogue and price-list for the fall of 1891 and spring of 1892. To accommodate their growing business they are making additions to their capacity of about 85,000 square feet in factory and 40,000 square feet in warehouse, besides well equipped saw mill.

THE JAMES L. HAVEN COMPANY, Cincinnati, Ohio: Net price-list No. 130, to apply to their catalogue No. 15. This covers a large line of interest to the Hardware trade, including such season goods as Cider Mills, Corn Shellers, Cutting Boxes, Cane Mills, &c.

MCKINNEY MFG. COMPANY, Allegheny, Pa.: Catalogue showing their Polished Steel Butts, Strap and T Hinges, &c. The list contains some 57 pages, in which their well-known line of these goods is attractively shown. The company state that they have added largely to their buildings and machinery, so that they now have the largest works in the country for the exclusive manufacture of Steel Hinges and Butts. It is also stated that special sizes and styles of these goods will be made to order.

WILCOX, CRITTENDEN & Co., Middletown, Conn.: Sailmakers, Awning Makers, Ship Chandlery and Marine Hardware. This line of goods is shown in their illustrated catalogue and price-list of 130 pages, bound in blue cloth. In this catalogue each article has a number, as far as practicable, which number is to be used when ordering, obviating the necessity of long descriptions, and to facilitate prompt shipments. Their discount sheet No. 90 accompanies the catalogue.

It Is Reported—

That J. M. Hadesty's Hardware store at Tamaqua, Pa., was recently robbed of articles amounting to \$500. There is no clew to the thieves.

That Joseph & George Hindert are a new Hardware firm at Minonk, Ill.

That Rubble & Sugroe have entered the Agricultural Implement business at Stockton, Ill.

That W. H. Davis is the proprietor of a new Hardware store at Michigan City, Ind.

That J. J. Fairbanks has sold his interest in the Hardware business of Stone & Fairbanks, West Gardner, Mass., to A. Young.

That Quincy Dyer's Hardware store at Hyde Park, Mass., was damaged by fire on the 11th inst. The fire was caused by the

explosion of a lamp. About \$7000 worth of stock was carried, and this was all more or less damaged by fire, smoke and water.

That the Banks Hardware Company are successors to Alves & Co., Henderson, Ky.

That Henry G. Burrill has started in the Hardware and Stove business at Stoughton, Mass.

That Lobeck & Linn are a new Hardware firm at Omaha, Neb.

That T. H. McNevin is a new Hardwareman at Menominee, Wis.

That William McNeil, dealer in Hardware, Philadelphia, N. Y., has moved to a new location.

That R. E. Everett, Hardware, Mognona, Iowa, has sold out to G. A. Burchard.

That Harvey & Co., Hardware dealers, Guelph, Ont., have sold out to Pringle & Chinis.

Exports.

PER BARK CONCORDIA, JULY 28, 1891, FOR SYDNEY, N. S. W.

By Strong & Troubridge.—16 dozen Hardware, 8 dozen Hammers.

By W. H. Crossman & Bro.—4 casks Pump Parts, 1 case Plated Ware, 1 dozen sets Sad Irons, 6 dozen Broilers, 1 dozen Axes, 1 case Carriage Hardware.

By Reed & Barton.—10 packages and 6 casks Silver-Plated Ware.

By Edward Miller & Co.—31 packages Lamp Goods.

By Australasian-American Shipping Company.—9 dozen Hatchets.

By R. W. Forbes & Son.—8 dozen Tools, 8 dozen Hardware, 1 case Hardware.

By Australasian-American Shipping Company.—9 cases Axes, 2½ dozen Wringers, 1 case Carriage Hardware.

FOR SYDNEY AND NEWCASTLE.

By Arkell & Douglas.—675 pounds Nails, 107 crates Stoves, 24 packages Barrows, 7 cases Rakes and Forks, 5 packages Shellers, 1 case Sandpaper, 6 cases Broilers, 1 case Stencils, 6 cases Sad Irons, 94 cases Axes.

By S. Hoffnung & Co.—13 dozen Wrenches, 36 Stoves, 9 Scales.

By McLean Bros. & Rigg.—619 pounds Carriage Hardware, 12 dozen Drills, 12 dozen Hammers, 8 gross Fire Shovels, 4 dozen Augers, 24 dozen Hames, 18 dozen Hatchets, 8 dozen Chisels, 1 dozen Fret Saws, &c.

By Coombs, Crosby & Eddy—7 dozen Hardware, 3 dozen Hammers, 6 dozen Locks, 3½ dozen Rakes, 24 dozen Hammers, 2 dozen Wringers, 6½ dozen Tools.

By Arkell & Douglas.—2 casks Pumps, 8 packages Grindstone Fixtures, 8 Lawn Mowers, 6 Scales, 1 dozen Wringers, 20 cases Guns and Cartridges, 800 feet Hose, 8000 Bolts, 90 dozen Tools, 5 dozen Lamp Ware, 59 dozen Hardware.

PER SHIP CENTURION, AUGUST 5, 1891, FOR MELBOURNE, AUSTRALIA.

By Arkell & Douglas.—581 reels Barb Wire, 381 dozen Axes and Hatchets.

By McLean Bros. & Rigg.—18 Wrenches, 48 Seed Sowers, 1 case Lampware.

By V. Basanta.—1 case Blocks, 6 Churns.

By Russell & Erwin Mfg. Company.—17 packages Hardware.

By R. W. Forbes & Son.—1900 pounds Nails, 8 cases Choppers, 4 cases Hardware.

By Sargent & Co.—39 packages Hardware.

By Peck, Stow & Wilcox Company.—11 boxes Tinsmiths' Tools.

By Meriden Britannia Company.—22 packages Silver Ware.

By Sargent & Co.—2 cases Hardware.

By Edward Miller & Co.—3 packages Lamp Goods.

By Simpson, Hall, Miller & Co.—18 packages Plated Ware.

By Edward Miller & Co.—11 packages Lampware.

By Atlas Tack Company.—1120 pounds Nails.

By Russell & Erwin Mfg. Company.—15 cases Hardware.

By the Australasian-American Shipping Company.—3 cases Stoves, 50 dozen Axes, 246 pounds Stoves.

By W. H. Crossman & Bro.—4 cases Lamp Goods, 5 gross Fish Lines, 3 packages Pump Parts, 12 dozen Hinges, 9 dozen Razor Straps, 4 Choppers, 1 case Hose, 1 case Axes, 13 packages Hardware, 1000 Cartridges, 1 dozen Lawn Mowers, 25 dozen Lamps, 6 dozen and 1 gross Traps, 100 Gas Stoves, 1 Washing Machine, 6 dozen Pruning Shears, 25 dozen Ladders, 1 dozen Axes, 4 cases Grindstone Fixtures, 26 packages Lamp Goods, 16 cases

Hardware, 2 dozen Revolvers, 1 box Hardware, 32 cases Loaded Shells
By Arkell & Douglas.—10 gross Traps, 3 cases Tinware, 36 dozen Faucets, 12 dozen Straps, 12 Freezers, 1 case Hardware, 9 gross Traps, 28 dozen Axes, 12 Fire Arms, 381 reels Barb Wire, 20 cases Hardware, 600 pounds Nails, 10 dozen Wringers, 10 dozen Axes, 3 cases Hardware, 1 case Hardware, 2 boxes Pumps, 1000 pounds Nails, 1 dozen Tills, 8 boxes Hardware, 1 gross Straps, 41 cases Hardware, 2 gross Wire, 65 pounds Rivets, 200 pounds Nails, 5 dozen Brushes, 3 crates Ladders, 12 Guns, 2 cases Implements, 22 cases Hardware, 19 cases Lanterns, 12 dozen Traps, 4 cases Tacks, 93 dozen Axes, 4 packages Pumps, 1 case Agate Ware, 6 cases Wringers, 17 cases Hardware, 1 case Shrinkers, 2 cases Tire Benders, 3 dozen Bench Screws, 2 cases Wire Ware, 36 cases Hardware, 1 dozen Tills, 41 dozen Axes, 3½ dozen Wringers

PER BARK LILLIAN, AUGUST 6, 1891, FOR PORT ELIZABETH, SOUTH AFRICA.

By W. C. Hodgkins & Co.—8800 Cartridges, 23,000 Primers, 114 pounds Revolvers and Tools.

By A. Field & Co.—1½ dozen Tools, 8 dozen Wrenches, ½ dozen Churns, 16 Rifles, 12,000 Cartridges, 8 dozen Tools, 1 dozen Axes.

By Coombs, Crosby & Eddy.—8 Agricultural Implements, 3 dozen Meat Stuffers, 10,200 pounds Barb Wire, 3 dozen Rakes, 1 dozen Traps, 50 dozen Axe Handles.

By W. E. Peck.—5 dozen Axes, 6 crates Agricultural Implements, 1 case Agricultural Machinery, 6 Scales.

By W. H. Crossman & Bro.—20 bundles Barrow parts, 5500 pounds Nails, 5 bundles Barrow Parts, 2 dozen Picks, 21 dozen Barrow Parts, 4 crates and 6 cases Store Trucks, 3 gross Stove Polish, 18 Scales, 50 dozen Hardware, 18 cases Agricultural Implements, 15,000 pounds Nails, 6 cases Agricultural Implements, 21 cases Hardware, 6 Scales, 11 cases Hardware, 7 Bells, 1 dozen Churns, ½ dozen Ladders, 3100 pounds Nails, 5 reams Sandpaper, 3 dozen Hardware, 9 dozen Rakes, 1 case Air Guns, 6 dozen Wrenches, 900 feet Hose, 7 cases Parers, ¾ dozen Scales, 6 Stoves, 5 cases Hardware, 3 cases Agricultural Implements, 12 Stoves and Parts, 12 cases Agricultural Implements, 9 Grindstones, 1 Churn, 24,000 pounds Nails, 2 Churns, 2 cases Hardware, 6 cases Plow parts, 1 dozen Barrow parts, 10 cases Hard ware.

PER BARK OLE KUNDSSEN, AUGUST 7, 1891, FOR PORT NATAL, SOUTH AFRICA.

By L. D. Crossmond & Co.—1 case Agricultural Implements.

By Winchester Repeating Arms Company.—2 Guns, 200 Empty Shells, 100 Bullets, 500 Primers.

By Sherman & Lyon.—1 Steel Scraper, 18 Wheelbarrows.

By H. W. Prabody & Co.—½ dozen Scales.

By Woodhouse & Stortz.—6 dozen Axes, 181 pounds Hardware.

By Coombs, Crosby & Eddy.—2 dozen Plows, 9 dozen Plow Fittings, 24 dozen Can Openers, 12 Wringers, 21 dozen Scythes, 4½ dozen Locks.

By W. H. Crossman & Bro.—108 packages Agricultural Implements, 25,000 pounds Wire, 26 dozen Hardware, 3 cases Agricultural Implements.

PER BARK SVERRE, AUGUST 8, 1891, FOR PORT ELIZABETH, SOUTH AFRICA.

By Coombs, Crosby & Eddy.—½ dozen Hardware, 10 pieces Plows, 2 pieces Refrigerators.

By H. W. Peabody & Co.—11 packages Ladders, 35 kegs Nails, 12 Corn Shellers.

By Arkell & Douglas.—100 reels Barb Wire, 3 cases Guns and Implements, 120 kegs Nails, 1 dozen Pumps, 220 dozen Edge Tools, 36 cases Cartridges, 84 cases Plows, 2 cases Churns and Ladders, 16 gross Hardware.

By Strong & Troubridge.—61 kegs Nails, 41½ dozen Axes, 2 dozen Meat Choppers, 11 dozen Hardware, 4½ dozen Locks, 16,000 Cartridges, 15 Guns, 14 packages Hardware, 18½ dozen Rakes, 24 Scales, 3 Churns.

By Corner Bros. & Co.—500 reels Barb Wire, 55 cases Agricultural Implements.

By Winchester Repeating Arms Company.—18 Rifles, 10,000 Cartridges.

FOR EAST LONDON.

By Arkell & Douglas.—10 crates Washers, 119 cases Agricultural Implements, 3000 pounds Nails, 5 Washers, 30 Scales, 20 dozen Axes, 7 packages Ladders, 86 packages Stoves.

PER BARK ITONUS, AUGUST 12, 1891, FOR SYDNEY, N. S. W.

By Manhattan Brass Company.—10 cases Brass Goods.

By S. Halsey & Son.—1 case Hardware.

By Bradley & Hubbard Mfg. Company.—24 packages Lamp Goods.

By Meriden Britannia Company.—12 barrels Silver-Plated Ware.

By Simpson, Hall, Miller & Co.—13 casks Plated Ware.

By B. F. Avery & Sons.—7 packages Plows.

By Schoerling, Daly & Gates.—3 cases Fire Arms, 3 cases Rifles and Carbines.

By Australasian-American Shipping Company.—6 dozen Axes.

By McLean Bros. & Rigg.—5500 Carriage Bolts, 2 packages Braces, 4 packages Saws, 2 boxes Files, 17 cases Tinware, 1 case Horse Hoes, 2 dozen Money Drawers, 1 gross Potato Mashers, 4 dozen Saw Sets, 30 dozen Drills, 1 case Brushes, 1 case Mouse Traps, 13 cases Picks, 40 cases Axes, 15 dozen Wrenches, 16 dozen Hammers, 8 Forges, 6 dozen Braces.

By Australasian-American Shipping Company.—2 cases Nuts and Bolts.

By Arkell & Douglas.—100 dozen Shovels, 6 packages Blocks, 48 dozen Broilers, 17,000 pounds Pig Iron, 20 dozen Shovels, 5 cases Picks, 27 cases Nails, 2 cases Rifles, 2 cases Tills, 10 cases Bolts, 3 packages Pumps, 111 packages Axes, 36 bundles Hardware, 7 cases Tools.

By S. Hoffnung & Co.—3 dozen Scales and

Picks, 15 dozen Axes, 7½ dozen Wringers,

½ dozen Sweepers, 24 dozen Hammers, 40

dozen Saws, 1½ dozen Lawn Mowers, 133½

dozen Wire Goods, 100 gross Paper Caps, 21

dozen Braces, 20 dozen Lamp Goods, 16 packages Lamp Goods, 6 dozen Tinware, 1 dozen

Plows, 5 dozen Churns, 12 packages Lamp Goods, 13 dozen Lamp Goods, 91 dozen Tinware, 9½ dozen Hardware.

PER SHIP BAY OF BENGAL, AUGUST 13, 1891, FOR SYDNEY, N. S. W.

By F. & J. Meyer.—48 dozen Hoes.

By Coombs, Crosby & Eddy.—52 dozen Axe Handles, 12 dozen Hoe, 1 dozen Adzes, 6

dozen Hoe Handles, 22 dozen Elge Tools, 5

dozen Axes.

By R. W. Forbes & Son.—4 5-6 dozen Guns, 4 packages Wind Mills, 17 packages Cultivators, 2 cases Carriage Hardware, 12 cases Cork Pullers.

By Healy & Earl.—4 boxes Hardware, 3 cases Saws, 6 boxes Iron Picks, 2 cases Sandpaper, 6 cases Blowers, 4 Blowers, 7 cases Axe Handles.

By Winchester Repeating Arms Company.—103 Guns, 10,000 Cartridges.

By W. Lunham.—50 crates Wheelbarrows.

By J. L. Mott Iron Works.—32 packages Stoves.

By W. J. Kingsland.—16 cases Nails.

By Russell & Erwin Mfg. Company.—17 packages Hardware.

By V. Basanta.—45 dozen Locks, 78 Planes, 5½ dozen Augers.

By W. C. Barker Company.—3 packages Agricultural Implements.

By E. W. Harrison.—1 case Emery Wheels.

By E. Bement & Sons.—5 boxes Agricultural Implements.

By Arnold, Cheney & Co.—2 cases Hardware.

By W. K. Freeman.—3 boxes Hardware, 8

packages Hardware, 35 boxes Handled Axes.

By Coombs, Crosby & Eddy.—9 cases Bird Cages, 78 crates Stoves, 20 packages Lawn Mowers, 2 barrels Tools, 1 case Chalk, 1 case Hay Forks, 6 cases Wire Goods, 28 cases Edge Tools, 2 cases Rat Traps, 14 packages Hardware, 9 cases Tools, 15 cases Meat Choppers, 6 racks Churns, 3 dozen Wrenches, 6 cases Lemon Squeezers, 5 cases Hardware, 16 cases Tools, 12 cases Wringers.

By William E. Peck.—1 case Hardware.

By A. S. Lascelles & Co.—4 dozen Picks, 8

dozen Braces, 13 cases Fire Arms, 4 gross

Traps, 20 dozen Saws, 2 dozen Wringers, 30

dozen Axes, 2 gross Meat Choppers, 21 dozen

Axes, 3 dozen Hatchets, 1 case Fire Arms,

6 dozen Mattocks, 6 dozen Picks, 1 case Hard

ware, 1 case Cages, 4 dozen Churns, 1 barrel

Braces, 30 dozen Axes, 9 packages Hardware,

4 packages Hardware, 1½ gross Broilers, 1

case Tills, 1½ gross Wrenches, 1 dozen

Scales, 8 dozen Meat Choppers.

By Strong & Troubridge.—22 dozen Tools, 6

dozen Braces, 2 dozen Hardware, 2 barrels

Hinges, 1 box Tacks, 10 cases Axes, 7 cases

Bolts, 1 case Axle Clips, 3 cases Pumps, 1

case Hammers, 1 case Braces, 100 gross

Caps, 1 dozen Picks, 6 gross Pencils, 2 boxes

Bird Cages, 19 dozen Cutlery, 7 dozen

Strips, 1 case Stone, 1 case Cutlery, 13 Re

frigerators.

By R. H. Dana & Co.—4 cases Files, 2 cases

Meat Choppers, 5 cases Hammers, 35 kegs

Nails, 3 cases Hardware, 3 Bellows, 1 pack

age Bellows, 1 package Hardware.

By F. B. Wheeler Company.—3 cases

Chalk, 1 case Brushes.

By R. W. Cameron & Co.—10 tons Pig Iron,

22 boxes Pumps, 2 crates Washers, 22 packages

Lamp Goods, 2 cases Hardware.

By H. W. Peabody & Co.—1 dozen Emery

Wheels, 5 cases Bolts and Nuts, 1 barrel

Hardware, 11 crates Churns, 2 hogsheads

Pumps, 1 case Tinware, 3 boxes Hardware,

62 dozen Hatchets and Axes, 1 case Chucks, 4 cases Hardware, 6 cases Pumps, 2 cases Tools, 6 cases Hardware, 2 cases Wringers, 2 cases and 3 packages Hardware, 1 package Corkscrews, 2 boxes Tools, 1 crate and 1 case Sandpaper, 14 cases Hardware, 25 dozen Axes, 35 dozen Handled Axes, 10 dozen Picks, 4 kegs Emery Wheels, 1 barrel Hoes, 6 cases Hatchets, 14 cases Horse Nails, 29 cases Agricultural Machinery, 2 cases Harrows, 6 cases Agricultural Machinery, 20 dozen Handled Axes, 1 box Lamp Goods, 3 crates Oil Stone, 2 cases Hardware, 13 cases Plows, 3 cases Lamp Goods, 1 case Hardware, 1 Mower.

By W. H. Crossman & Bro.—18 Saws, 9 packages Hardware, 6 Horse Hoes, 1 dozen Axes, 1 dozen Churns, 1 gross Rat Traps, 2 packages Call Bells, 4 cases Iron Bolts, 9 cases Iron Nails, 2 cases Scoops, 3 cases Emery Wheels, 4 cases Corn Mills, 18 packages Barrows, 30 dozen Picks, 4 dozen Squares, 14 dozen Braces, 28 dozen Cow Bells, 5 packages Plated Ware, 12 cases Stove Parts, 1 gross Traps, 2 dozen Carpet Sweepers, 35 packages Hardware, 40 dozen Snaths, 23 dozen Axes, 26 dozen Cages, 3 packages Blocks, 6 cases Sad Irons, 1 case and 2 packages Hoes, 6 packages Shellers, 15 dozen Hammers, 40 packages Stoves, 8 cases Wringers, 3 cases Stone, 1 crate Jacks, 4 cases Wrenches, 1 case Brushes, 60 packages Hardware, 1/2 dozen Churns, 12 dozen Transom Lifters, 40 dozen Shovels, 22 dozen Tools, 21 dozen Axes, 2 cases Guns, 13,000 Cartridges, 2 gross Cow Bells, 6 dozen Lifters, 1 gross Lanterns, 19 packages Hardware, 3 dozen Scales, 2 cases Hardware, 1 dozen Axes, 28 cases Hardware, 3 gross Traps, 7 packages Hardware.

PER BARK G. N. WILCOX, AUGUST 14, 1891, FOR BRISBANE, QUEENSLAND.

By H. W. Peabody & Co.—1 case Bolts, 1 box Nails, 1 case Hardware, 60 crates and 25 packages Stoves, 17 packages Plows.

By Reed & Barton.—3 cases Silver Ware.

By Edward Miller & Co.—21 packages and 33 barrels Lamp Goods.

By Mautler & Quereau.—1 case Wood Faucets, 1 case Rakes.

By Reed & Barton.—2 packages and 1 case Silver Plated Ware.

By W. J. Kinistand.—13 cases Nails.

By R. W. Forbes & Son.—14 dozen Axes and Mattocks, 11 dozen Churns, 7 dozen Rifles, 16,000 Cartridges, 1 case Saws, 20 packages Stoves, 8 packages Hardware, 300 reels Barb Wire, 18 packages Hardware, 12 Lawn Mowers, 20 cases Lamp Goods, 29 cases Stoves, 72 dozen Tools, 5 boxes Plows.

By Strong & Trowbridge.—2 cases Hardware.

FOR HOBART.

By R. W. Forbes & Son.—4 cases Carriage Bolts, 1 cask Lanterns, 2 cases Pumps, 6 dozen Traps, 63 dozen Tools, 21 packages Hardware, 11 cases Carriage Hardware, 2 cases Hardware, 60 cases Axes, 50 kegs Nails, 15 packages Agricultural Implements.

By A. S. Lascelles & Co.—5 cases Nails.

By W. H. Crossman & Bro.—30 cases Nails, 51 cases Hardware.

By Arkell & Douglas.—6 packages Nails, 8 crates Stoves, 18 dozen Tools, 8 dozen Wringers, 69 dozen Axes, 33 dozen Hardware, 40 dozen Lampware.

By H. W. Peabody & Co.—1 case Whetstones, 1 case Edge Tools, 34 packages Hardware.

PER BRIG ECHO, AUGUST 19, 1891, FOR PORT NATAL, SOUTH AFRICA.

By W. Lunham.—2 boxes Corn Sellers.

By Corner Bros. & Co.—70 kegs Horse Shoes, 149 cases Agricultural Implements, 34 cases Hardware.

By Arkell & Douglas.—200 reels Barb Wire, 1 case Brushes, 12 Ranges, 2 cases Lampware, 4 cases Plows and Scrapers, 50 dozen Edge Tools.

THE PERFECTION MFG. COMPANY, Gloversville, N. Y., have recently been incorporated, with a capital stock of \$50,000. The company are organized for general manufacturing purposes, but more especially to produce and put on the market the Perfection Stallion Guard. The incorporators of the company are Wm. H. Demarest, John C. Hutchinson, Joseph F. Van Ness, Simeon S. Gross and Nelson H. Anibal. The officers are as follows: John C. Hutchinson, president; Wm. H. Demarest, treasurer, and Nelson H. Anibal, secretary. W. N. Trumble, the inventor of the Stallion Guard, is retained by the company as business manager. The company hold letters patent on this device

in the United States, Great Britain, France, Germany, Austria and Australia, with others pending.

ADVICES RECEIVED at the State Department announce a very important change in the Mexican Custom House regulations. Under the old system all goods imported were subject to two examinations, one at the port of entry and another in the Custom House where the goods were delivered. By a rule just adopted the last inspection is now dispensed with. Goods are thoroughly examined upon their entrance into the country, sent to their destination with due precautions, and delivered to consignees upon presentation of the proper documents. The change is warmly welcomed by the mercantile community, as it saves vexatious delays, does away with the expense of repacking and expedites trade generally.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

About the only noteworthy developments in connection with this branch of trade have been a hardening tendency to the market for Pig Lead and a turn for the better in prices for out of town brands of Linseed Oil. In neither case has the movement reached proportions that would directly affect the marketing of any of the various lines of Paints into the composition of which the respective commodities enter, but that the change has relieved a great deal of uncertainty heretofore prevalent is beyond question, and at present there is nothing in the condition of the market for base materials that would tend to interfere with a good fall season trade. Already orders for various products for delivery ahead are coming in, but the aggregate is not above the average for the season, and there is still room for improvement.

White Lead.—The market is wholly unchanged. Jobbers take the same liberties with corrodors' list prices that they have heretofore, using the pigment as a "leader" to a considerable extent, but the producers are not found to be making any concessions, direct or indirect. The distribution is represented as being well up to the average for the season. Mixed Leads sell at somewhat variable prices, but are no more irregular than they have been previously of late, and seem to be moving to a very fair extent.

On Zincs there is nothing to offer, aside from practically a repetition of last week's summary of the situation. Manufacturers state that orders for domestic brands are running fully up to the average for the season, and importers assert that there is no reason to complain about the distribution of foreign product. At the same time, it is admitted that more orders could conveniently be taken care of, and moderate accumulations of supply that usually take place in the summer are noted. The prospects for a freer outlet later on are looked upon as being favorable, however, and former prices are adhered to.

Colors.—In nearly all lines of dry Colors business is momentarily quiet. Traveling salesmen are sending in some orders for house painters' specialties, but spot business in that line and in grinders' specialties is momentarily on a moderate scale. Competition continues temperate, however, and prices are quite steady nearly all along the line. Mixed Paints have met with somewhat better sale the past week, but are yet rather slow. Paris Green and

other insecticides are said to be moving freely at some Southern points, but remain quiet here.

Miscellaneous.—Block Chalk has been selling ex ship at \$2 @ \$2.10, showing a fairly firm market. Whiting is firmer under the influence of fairly active demand and Paris White steady. Clays in general have been rather quiet at old prices.

Oils and Turpentine.

As regards business in Oils, there is really nothing to report outside of the routine movement, and new features of special interest to buyers are extremely few. As a matter of fact, about the only matter deserving of mention is a turn for the better in the position of the Linseed Oil market, due to more restricted offering of out of town brands. In other lines the general surroundings are almost precisely the same as they were a week ago and devoid of incentive to anything more than routine movement on the part of either buyers or sellers. Values have kept remarkably steady nearly all along the line.

Linseed.—To all accounts, cheap lots of Western product offered in this market have been absorbed or withdrawn. The reason for this is not made clear, but in view of the fact that purchases were not much above the average when prices were at the lowest point, it is presumed that the change is a result of the recent Western conference of crushers. At present 40¢ is generally asked for the outside brands and 39¢ is considered a strictly inside rate even for carload lots. City crushers hold their prices at 42¢ for domestic seed product and 56¢ for Calcutta; they report sales rather larger during the past week.

Cotton-Seed Oils.—Since the consumption of the large sales referred to last week there has been merely a routine trade in refined product, and while some few holders have taken advantage of the improvement in prices to realize, the market retains a fairly firm tone. The sales reported aggregate about 1500 barrels, including off-grade Yellow at 32¢ @ 34¢; prime at 38¢ and choice 40¢ @ 41¢. In crude product the dealings have been moderate, chiefly at prices that have ruled since the beginning of the month. Advices from the South indicate that opening prices for new season Oil will be moderate.

Fish Oils.—Reports from the Menhaden fishing on Long Island Sound and on the Maine coast state that the catch is still poor, owing to unfavorable weather. The supply of crude Oil is very moderate, nearly all outside holdings having latterly been picked up, and any price below 30¢ is purely exceptional. There has been no movement in crude Whale or crude Sperm Oil. The various manufactured products are selling at former prices, but in a routine way only. Cod Oil has slow sale, but with supply moderate, prices hold very steady.

Lard Oil.—In this line there has been no important change. The market for crude material is watched with interest by pressers and buyers, but nothing has occurred that would operate decidedly to the advantage of either side, and prices stand precisely as they were a week ago.

Miscellaneous.—Recent low prices have attracted a steady run of small orders, and these have cut stocks down sufficiently to give the market more tone. Prices are not higher, but show greater firmness. Cocoanut and Palm Oils have been moving fairly at last week's prices.

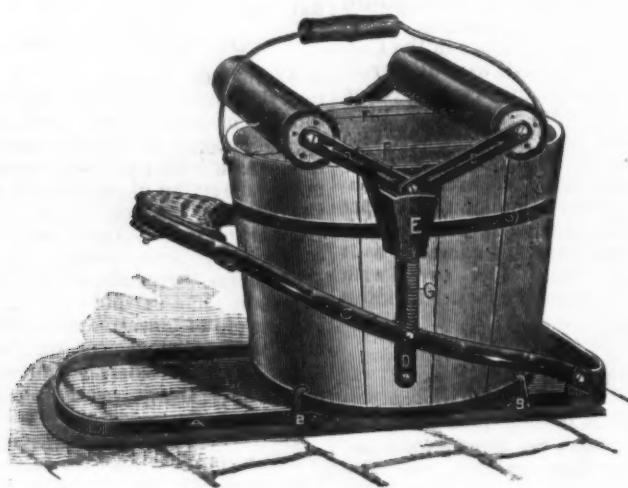
Spirits Turpentine.—Stocks in first hands here have increased to 2000 barrels, and at Southern centers there are now about 35,000 barrels on hand. Despite this quite heavy supply and the absence of anything more than routine demand, prices have been held firmly at 36 1/2¢ @ 37 1/2¢, as to style of package.

Schmuck's Mop Wringer No. 1.

Adjustable Chair Company, 112 Bank street, Cleveland, Ohio, are offering the trade a mop wringer, as illustrated herewith. It consists of a wrought-iron frame,

people who glance at or compare their watches with the "standard time" clock in a jeweler's window. Even those who do not carry watches are interested in knowing the time of day, consequently a clock properly situated is certain to attract

back of the pan. Viewed from the front one sees a dish pan, in the bottom of which is the face and hands of a clock. The pan is so placed that the works of the clock are not to be seen. Painted on a piece of tin secured to the top of the pan are the words "Standard Time."

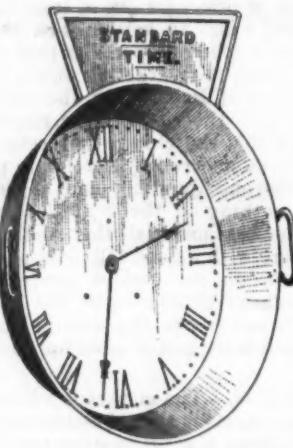
*Schmuck's Mop Wringer No. 1.*

arranged to fit on any sized pail. Wood rolls made of hard maple chemically treated are brought together by pressing the treadle down with the foot. The mop is placed between the rolls before the pressure is applied. The advantages claimed for the wringer are: That boiling hot water can be used to mop the floor, thus destroying insects; that with hot water the dirt and grease are more thoroughly removed, and that gloves may be worn while mopping, as the hands do not come in contact with the water. The wringer is especially intended for mopping in stores, offices, hotels, public buildings, &c.

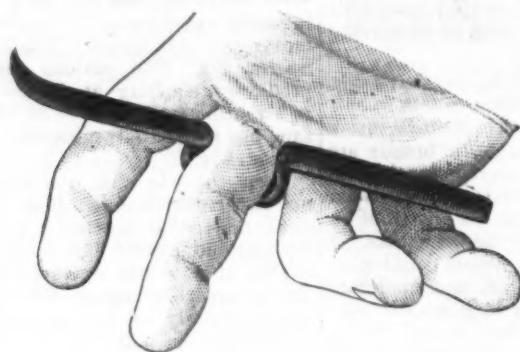
Cincinnati Husking Pin.

The Cincinnati Tool Company, 216 West Second street, Cincinnati, Ohio, are introducing a husking pin, as illustrated herewith. This is slipped over the back of the second finger between the knuckle and first joint. The manufacturers claim that it is well made and well finished; that it is light and simple; that it can be worn with or without gloves; that it cannot slip off the hand; that it is not clumsy and

tract attention. Dealers in jewelry have, as a general thing, monopolized the clock as an advertising feature, even going so

*A Dish Pan Clock.*

far as to suspend dummies in front of their places of business, and as the painted hands on these wooden clocks only indi-

*Cincinnati Husking Pin.*

never in the way, and that it is easy on the hand.

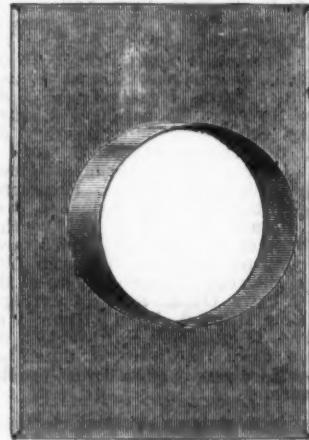
A Dish Pan Clock.

There appears to be something attractive about a clock or other timekeeper when so placed as to be observed by the public. Any one can easily determine this fact by noticing the number of

cate the correct time twice in 24 hours, they are of little practical value. It would hardly be supposed that a clock could be adapted to the show window of the dealer in tinware, yet this has been accomplished. In the show window of T. E. Coplin's store on North Clark street, Chicago, is to be seen a dish pan with the concave side to the front. On the bottom of the pan is painted a clock dial, the hands being connected with the works, which are at the

Some New Furnace Fittings.

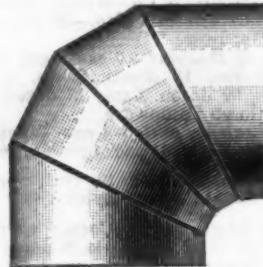
The Excelsior Steel Furnace Company, 110 South Jefferson street, Chicago, have added some new goods to their already

*Some New Furnace Fittings.—Fig. 1.—Plaster Collar.*

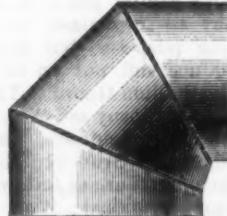
extensive line of furnace fittings. These new articles, which are illustrated in the accompanying engravings, will be of interest to the furnace trade. Fig. 1 shows

*Fig. 2.—Finishing Collar.*

the plaster collar for use where the basement ceilings are to be plastered after single register boxes and collars have

*Fig. 3.—Four-Piece Hot-Air Pipe Elbow.*

been put in. The collar makes a neat finish, and the manufacturers anticipate a large demand for it. Fig. 2 is a finishing collar and serves the same pur-

*Fig. 4.—Taper Elbow.*

pose as the plaster collar, but in addition forms an outer collar around the inside box collar with an air space between, and is

put in place after the ceiling of basement is plastered. Fig. 3 shows a four-piece hot air pipe elbow, which has been added to the goods made by this company to meet the demand from those sections where four-piece elbows are preferred. A taper elbow, illustrated in Fig. 4, is intended to be used where two hot-air pipes of different sizes are to be connected at an angle of 90 degrees. This elbow is made to order only, while the other goods mentioned are carried in stock.

The Sylph Cycle.

Rouse-Duryea Cycle Company, Peoria, Ill., are putting on the market the Sylph cycle, as illustrated in Fig. 1. One of the

and down, so that there is no loss of rigidity; also, that when either wheel strikes an obstruction it rises over it, compressing the springs instead of jolting the rider.

Attention is called to the fact that the portions of the frame composing the hinge are made of pressed sheet steel, carefully shaped, pinned and brazed so as to combine great strength and rigidity with extreme lightness; as is every part of the machine that cannot better be made of tubing or forgings.

On the rear wheel, Fig. 3, the Duryea duplex spoke system is used, for which is claimed all the advantages of both direct and tangent spokes, with none of their disadvantages. The hub of this wheel is of pressed sheet steel, provided with short, heavy spokes carrying disks or nipples.

aim in designing, perfecting and constructing the Sylph has been to combine all the good points possible, and to build a bicycle that would satisfy the most ex-

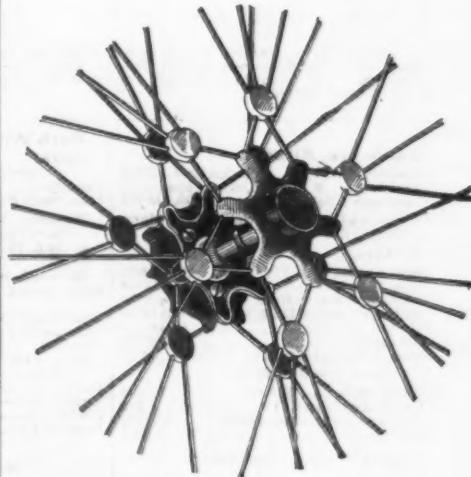


Fig. 3.—Rear Wheel of the Sylph.

acting, and also to offer nothing that exhaustive experiments have not demonstrated to be desirable.

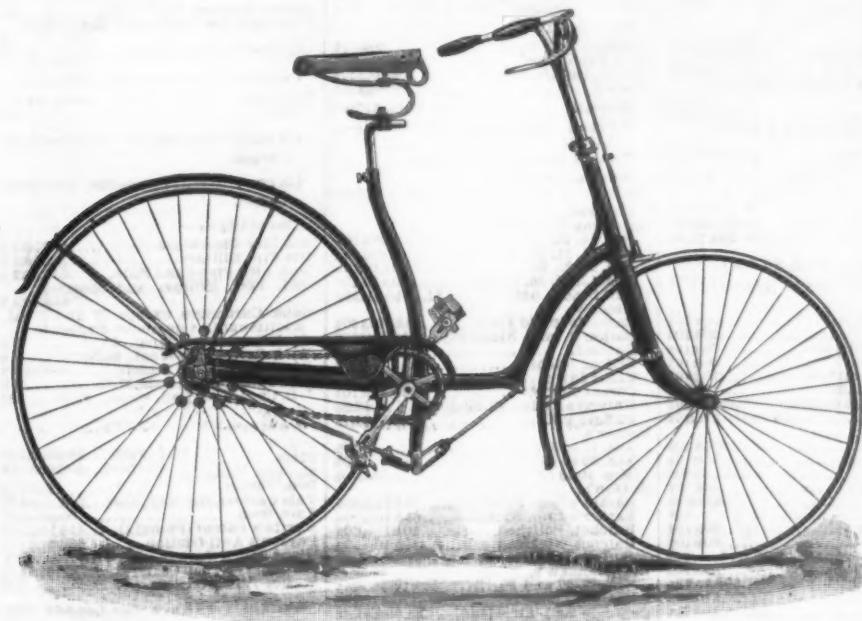


Fig. 1.—The Sylph.

unique features of this cycle is the three-part spring-truss frame, as shown in Fig. 2. This detail cut shows the arrangement of parts in the hanging truss frame, the manner in which the saddle post and pedals yield in passing over an obstruc-

tion. Into these nipples three direct spokes are screwed, one tangent forward, one radial, and one tangent backward. It is explained that this gives a wheel that is as easy to true up or repair as a direct spoke wheel; that it has

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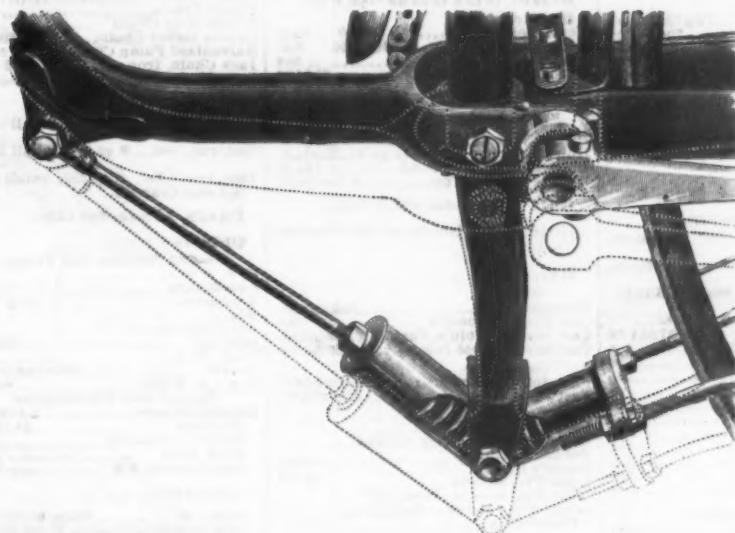


Fig. 2.—Hanging Truss Frame.

tion, and how the frame is braced by the truss rod and spring. The front and rear parts of the truss frame each carry a wheel, and the upper part carries the load. These parts are hinged together at the crank axle, and are held in the desired position by spring braces. It is stated that the spring is rigid in every direction except up

no crossed spokes; that it has no large holes in the rim to weaken it; no threads near the rim to rust, and no threads in the hub. Spokes of the same length and size are used in the front wheel. The manufacturers have introduced many other desirable features in the various parts of the machine and state that their

CURRENT HARDWARE PRICES.

AUGUST 26, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.	Barb Wire. —See Wire, Barb.	Stove and Plow.	Caps—
Domestic..... \$ dos \$3.00, 33¢ 45	Bars.	Stove..... 60¢	Percussion, # 1000—
Excisor..... \$ dos \$10.00..... 50¢ 10¢ 25	Crown—	Plow..... 60¢ 5¢	icks & Goldmark's and Union Metallic Cartridge Co.
Washburn's Self-Locking..... 20¢ 30¢ 10¢	Cast Steel..... \$ D 3 1/2	R. B. & W., Plow..... 55¢	F. L. Waterproof, 1-10¢..... 35¢ 37¢
Ammunition—See Caps, Cartridges, Shells, &c.	Iron, Steel Points..... \$ D 3 1/2	Tire—	E. B. Trimmed Edge, 1-10¢..... 47¢ 50¢
Anvils.	Basin, Wash—	Common, list Feb. 28, '83..... 65¢	E. B. Grind. Edge, Cent. Fire, 1-10¢..... 47¢ 50¢
Eagle Anvils, # 10¢..... 15¢ 18¢ 5¢	Standard Fibreware, No. 1, 10¢-inch, 42; 12-inch, \$2.25; 13¢-inch, \$2.75; 15-inch, \$3.25	Port Chester Bolt and Nut Company.....	Musket Waterproof, 1-10¢..... 50¢ 53¢
Peter Wright's..... 11¢ 11¢ 4¢	Beams, Scale—	Empire, list Feb. 28, '83..... 65¢	G. D. 27¢ 30¢
Armitage's Mouse Hole..... 10¢ 40¢ 16¢	Scale Beams, list Jan. 13, '82..... 50¢ 10¢ 5¢	Keystone, Philadel., list Oct. '84..... 75¢	A. B. Genuine Imported..... 45¢
Armitage's Mouse Hole, Extra..... 12¢ 12¢ 4¢	Chatillon's No. 1..... 40¢	Norway, Phil., list Oct. '84..... 80¢	Gley's E. H. 56¢ 58¢
Trenton..... 10¢ 10¢ 10¢	Chatillon's No. 2..... 50¢	Philadel., list Oct. 16, '84..... 80¢	Gley's D Waterproof, Central Fire, \$1.00
Wilkinson's..... 10¢ 10¢ 11¢	Custer's..... 83¢ 75¢	Bay State, list Feb. 28, '83..... 65¢	
Moore & Barnes Mfg. Co..... 38¢ 35¢	Dover..... \$ dos \$1.50	R. B. & W., Philadel., list Oct. 16, '84..... 80¢	
Anvil Vise and Drill—	Duplex (Standard Co.)..... \$ dos \$1.25	Borers, Tap.	Primers—
Millers Falls Co., \$18.00..... 20¢	Rival (Standard Co.)..... \$ dos \$1.00	Common and Rind..... 20¢ 10¢	Sterdan Primers, \$1.00..... 2¢
Cheney Anvil and Vise..... 25¢	Duplex Extra Heavy (Standard Co.)..... \$ dos \$3.50	Ive's Tap Borers..... 33¢ 55¢	L. C. Caps (for Sturtevant Shells) \$1.00..... 2¢
Allen Anvil and Vise, \$3.00..... 40¢ 10¢	Bryant's..... \$ gro \$14.00	Enterprise Mfg. Co..... 20¢ 10¢ 30¢	All other Primers, \$1.20..... 2¢
Star..... 45¢ 5¢	Double (H. & R. Mfg. Co.)..... \$ gro No. 0, \$12.00; No. 1, \$15.00; No. 2, \$18.00	Clark's..... 33¢ 35¢	Cards— List January 28, 1891.
Apple Parers—See Parers, Apple, &c.	Easy (H. & R. Mfg. Co.)..... \$ gro \$12.00	Borax. \$ D 9¢ @ 10¢ 4¢	Watson's Cotton, Wool, Horse and File..... 20¢
Augers and Bits—	Triple (H. & R. Mfg. Co.)..... \$ gro \$16.50	Boring Machines—See Machines, Boring.	Carpet Stretchers— See Stretchers Carpet.
Douglas Mfg. Co..... 70¢ 60¢ 5¢	Spiral..... \$ gro \$4.25 @ 4.5¢	Bow Pins— See Pins, Bow.	Carpet Sweepers— See Sweepers Carpet.
Wm. A. Ives & Co..... 70¢ 60¢ 5¢	Improved Acme (H. & R. Mfg. Co.)..... \$ gro \$9.00	Boxes, Wagon.	
Humphreysville Mfg. Co..... 70¢ 60¢ 5¢	Paine, Diehl & Co.'s..... \$ gro \$24.00	Per D. 24¢	
French, Swift & Co. (F. H. Beecher, P. S. & W. Co.)..... 70¢ 60¢ 5¢	Silver & Co. \$ dos \$1.50	Braces—	
Rockford Bit Company..... 70¢ 60¢ 5¢	Culinary—	American Bit Brace Co.; Nos. 10, 12, 20..... 60¢ 10¢	
Cook's, Douglas Mfg. Co. 66¢ 5¢	Keystone, P.D.C. & Co., Each, No. 1, \$1; No. 2, \$2..... 20¢	Nos. 11, 21, 24, 27..... 70¢ 10¢	Fire Cartridges..... 50¢ 52¢ 5¢
Cook's, N. H. Copper Co. \$0.50 & 10¢ 50¢ 5¢	Cone—	Nos. 22, 23, 25..... 60¢ 10¢ 5¢	Fire Bit Military..... 15¢ 22¢ 5¢
Ives' Circular Lip..... 60¢	Common Wrought..... 60¢ 10¢	Nos. 23, 26, 36, 37..... 70¢ 10¢ 5¢	Fire, Pistol and Rifle..... 25¢ 52¢ 5¢
Patent Solid Head..... 80¢	Western..... 20¢ 10¢	Ball Braces, net..... \$1.12 to \$1.35¢	Fire, Military and Sporting..... 15¢ 52¢ 5¢
C. E. Jennings & Co., No. 10, extension hp..... 40¢	Common Wrought..... 60¢ 10¢	Amidon's	Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
C. E. Jennings & Co., No. 30..... 60¢	Western, Sargent's list..... 70¢ 10¢	Barker's Imp'd Plain..... 75¢ 10¢ @ 80¢	Blank Cartridges, 22 cal., \$1.75..... 2¢
82¢ quarters, No. 5, \$0. No. 30, \$8.50 50¢	Kentucky, "Star"..... 70¢ 10¢	Barker's Imp., Nickelated..... 65¢ 10¢ @ 70¢	Blank Cartridges, 33 cal., \$3.50..... 2¢
Louis' Patent Single Twist..... 45¢	Kentucky, Sargent's list..... 70¢ 10¢	Eclipse Rachet..... 60¢	Primed Shells and Bullets..... 15¢ 52¢ 5¢
Russell Jennings' Augers and Bits, 10¢ 10¢	Kentucky Durham..... 70¢ 10¢	Corner Brace..... 40¢ 40¢ 21¢ 10¢	R. B. Caps, Round Ball, \$1.75..... 2¢
Imitation Jennings' Bits..... 60¢ 60¢ 5¢	Dodge, Genuine Kentucky..... 70¢ 10¢ 20¢	Universal, 8 in., \$2.10 10 in., \$2.25	R. B. Caps, Con. Ball, Swgd., \$2.00..... 2¢
Snell's Jennings Pattern..... 60¢	Texar Star..... 50¢ 10¢ @ 60¢ 10¢ 5¢	Buffalo Ball..... \$1.10 to \$1.15	
Pugh's Black..... 20¢	Door—	Barber's	
Rockford, Jennings' Pattern..... 60¢	Common, Yankee..... 50¢ 10¢	Nos. 10 to 16..... 50¢	Bed.....
Car Bits..... 60¢ 60¢ 10¢	Crane, T. C.'s..... 50¢ 10¢	Nos. 30 to 42..... 50¢	Plate..... { Brass, 55¢ 52¢ 1¢
Car Bits, P. S. & W. Co. 60¢ 10¢	Crane, T. C.'s..... 50¢ 10¢	Nos. 40 to 63..... 50¢ 10¢	Shallow Socket, { Others, 60¢ 60¢ 10¢
Snell's Car Bits..... 60¢	Crank, Brook's..... 25¢ 10¢	Saw—	Deep Socket..... 40¢ 10¢
L. Homomedu Car Bits..... 15¢ 10¢	Crank, Cone's..... 50¢ 10¢ @ 10¢ 25¢	Barker's Imp., Polished..... 75¢ 10¢ @ 80¢	Yale Casters, list May, 1884..... 30¢ 10¢ 24¢
Forster's Pat. Auger Bits, 20¢	Crank, Connell's..... 10¢	Barker's Imp., Nickelated..... 65¢ 10¢ @ 70¢	Martin's Patent (Phoenix)..... 45¢ 10¢ 5¢ 5¢
Cincinnati Bell-Hangers' Bits, 30¢ 10¢ 5¢	Lever, Sargent's..... 60¢ 10¢	Batchet, Polished..... 50¢ 10¢ @ 60¢ 5¢	Fayson's Anti-friction..... 30¢ 60¢ 10¢
Bit Stock Drills—	Lever, Taylor's, Promised or Plated..... 50¢ 10¢	Batchet, Nickelated..... 40¢ 10¢ @ 60¢ 5¢	Giant Truck Casters..... 30¢
Morse Twist Drills..... 50¢ 10¢ 5¢	Lever, Taylor's, Japanned..... 25¢ 10¢	Buffalo Ball..... \$1.10 to \$1.15	Stationary Truck Casters..... 50¢ 10¢
Standard..... 50¢ 10¢ 5¢	Lever, R. E. M. Co.'s..... 50¢ 10¢ 25¢	Bartholomew's, N.J., 22, 27 and 30..... 50¢ 10¢ @ 60¢ 5¢	Socket Truck Casters..... .50¢
Cleveland..... 50¢ 10¢ 5¢	Pull, Brook's..... 50¢ 10¢ 25¢	Nos. 11, 118, 119..... 70¢ 10¢	
Syracuse, for metal..... 50¢ 10¢ 5¢	Pull, Western..... 25¢ 10¢	Common Ball, American..... \$1.00 to \$1.10	
Syracuse, for wood (wood Hat) 20¢ 30¢ 5¢	Electro, Wollenski's..... 20¢	Fray's Genuine Spofford's, 50¢ 25¢ 50¢ 21¢ 10¢	
Williams' or Holt's, for metal, 50¢ 10¢ 10¢	Bigelow's & Dowse..... 20¢	Fray's No. 70 to 130, 81 to 123, 207 to 414..... 50¢ 10¢ 5¢	
Williams' or Holt's, for wood..... 40¢ 10¢	Taylor's, Hand..... 20¢	Ives' New Haven Novelty..... 70¢ 10¢ 5¢	
Cincinnati, for wood, 50¢ 10¢ 5¢	Light Brass..... 75¢ 10¢	New Haven Hatchet..... 60¢ 5¢ 60¢ 10¢	
Cincinnati, for metal..... 45¢ 10¢ 5¢	Extra Heavy..... 65¢ 10¢	Barber Hatchet..... 30¢ 5¢ 60¢ 10¢	
Expansive Bits—	White Metal..... 60¢ 10¢ 25¢	Barbers, Barber..... 60¢ 5¢ 60¢ 10¢	
Clark's small \$18; large, \$20, \$35 & 50¢ 10¢	Silver Chime..... 20¢ 10¢ 25¢	Spofford..... 60¢ 5¢ 60¢ 10¢	
Ives' No. 4, \$ dos \$80..... 40¢	Globe's, Cone's Patent..... 55¢ 10¢ 25¢	Osgood's Ratchet..... 40¢ 10¢ @ 60¢ 5¢	
Swan's..... 40¢	Call, Farm Hills..... 40¢ 10¢ 25¢	P. S. & W. Co., Peck's Patent..... 60¢	
Steers', No. 1, 10¢; No. 2, 12¢..... 35¢	Steel Alloy Church and School Boxes..... \$ D 3 1/2	Brackets—	
Stearns', No. 2, 8¢..... 30¢	Bellows—	Shef plain, Sargent's list, 55¢ 10¢ 5¢ 5¢	
Gimlet Bits—	Blacksmiths'..... 60¢ 25¢ 5¢ 5¢	Shelf, fancy, Sargent's list, 60¢ 10¢ 20¢	Bed.....
Common \$ gr gross \$2.75 & \$5.25	Molders'..... 40¢ 10¢ 25¢ 5¢	10¢ 10¢	Plate..... { Brass, 55¢ 52¢ 1¢
Diamond..... \$ dos \$1.10..... 20¢ 10¢	Hand & Bellows..... 40¢ 10¢ 25¢ 5¢	Shallow Socket, { Others, 60¢ 60¢ 10¢	
See—	Belting, Rubber—	Saw—	Shallow Socket.....
White Cut, Shenandoah's..... 45¢ 10¢ 5¢	Common Standard..... 70¢ 10¢ 25¢ 5¢	Barker's Imp., Polished..... 75¢ 10¢ @ 80¢	
Double Cut, Ct. Valley Mfg. Co. 50¢ 10¢ 5¢	Standard..... 70¢ 10¢ 25¢ 5¢	Barker's Imp., Nickelated..... 65¢ 10¢ @ 70¢	
Double Cut, Hartwells', \$ gro..... 15¢ 25¢	Extra..... 60¢ 10¢ 25¢ 5¢	Batchet, Polished..... 50¢ 10¢ @ 60¢ 5¢	
Double Cut, Douglass'..... 40¢ 10¢	N.Y.H.P. Co., Carbon..... 60¢	Batchet, Nickelated..... 40¢ 10¢ @ 60¢ 5¢	
Double Cut, Ives'..... 60¢ 60¢ 10¢	N.Y.H.B.P. Co., Diamond..... 50¢	Buffalo Ball..... \$1.10 to \$1.15	
Hollow Augers—	N.Y.H.B.P. Co., Para..... 40¢	Batholomew's, N.J., 22, 27 and 30..... 50¢ 10¢ @ 60¢ 5¢	
Ives, French, Swift & Co. 33¢ 6¢	Brackets—	Nos. 11, 118, 119..... 70¢ 10¢	
Douglas..... 83¢ 21¢ 5¢	Blacksmiths'..... 60¢ 25¢ 5¢ 5¢	Common Ball, American..... \$1.00 to \$1.10	
Bonney's Adjustable, \$ dos \$48..... 40¢ 10¢	Molders'..... 40¢ 10¢ 25¢ 5¢	Fayson's Genuine Spofford's, 50¢ 25¢ 50¢ 21¢ 10¢	
Stearns' Adjustable, 20¢ 10¢	Hand & Bellows..... 40¢ 10¢ 25¢ 5¢	Fray's No. 70 to 130, 81 to 123, 207 to 414..... 50¢ 10¢ 5¢	
Ives' Expansive, each \$4.50..... 50¢ 25¢	Belting, Rubber—	Ives' New Haven Novelty..... 70¢ 10¢ 5¢	
Universal Expansive, each \$4.50..... 50¢ 25¢	Common Standard..... 70¢ 10¢ 25¢ 5¢	New Haven Hatchet..... 60¢ 5¢ 60¢ 10¢	
Wood's..... 25¢ 10¢ 25¢ 10¢	Standard..... 70¢ 10¢ 25¢ 5¢	Barber Hatchet..... 30¢ 5¢ 60¢ 10¢	
Cincinnati Adjustable..... 25¢ 10¢	Extra..... 60¢ 10¢ 25¢ 5¢	Covert Traces..... 30¢ 25¢	
Cincinnati Standard..... 25¢ 10¢	N.Y.H.P. Co., Carbon..... 60¢	Covert Heel Chain..... 50¢ 25¢	
Ship Augers and Bits—	N.Y.H.P. Co., Diamond..... 50¢	Oneida Heel Chain..... 50¢ 25¢	
L. Homomedu's..... 15¢ 10¢ 15¢ 10¢ 5¢	N.Y.H.B.P. Co., Para..... 40¢	Galvanized Pump Chain..... 75¢ 5¢ 6¢ 6¢	
Watrous'..... 15¢ 10¢ 15¢ 10¢ 5¢	Bright Wire Goods— See Wire.	Jack Chain, Iron..... 75¢ 10¢ 20¢ 5¢	
Snell's Ship Auger Patt'n Car Bits, 15¢ 10¢ 15¢ 10¢ 5¢	Bright Wire Goods— See Wire.	Jack Chain, Brass..... 75¢ 75¢ 10¢	
Awl Harts— See Harts, Awl.	Bright Wire Goods— See Wire.	Chalk—	
Awls, Brad Sets, &c.	Bright Wire Goods— See Wire.	White, case lots, \$ gr 50¢; small lots 55¢	
Awls, Sewing, Common, # gr \$1.70, 45¢	Bright Wire Goods— See Wire.	Red, case lots, \$ gr 67¢; small lots 77¢	
Awls, Should. Peg, # gr \$2.45, 50¢ 10¢ 5¢	Bright Wire Goods— See Wire.	Blue, case lots, \$ gr 75¢; small lots 86¢	
Awls, Pat. Peg, # gr \$2.45, 50¢ 10¢ 5¢	Bright Wire Goods— See Wire.	See also Crayons.	
Awls, Shouldered Brad, 2.70 # gr..... 35¢	Bright Wire Goods— See Wire.		
Awls, Handled Brad, # gr 2.70 # gr..... 35¢	Bright Wire Goods— See Wire.		
Awls, Handled Scratch # gr, 7.50 35¢ & 10¢	Bright Wire Goods— See Wire.		
Awls, Socket Scratch, \$ dos, \$1.50 25¢ & 30¢	Bright Wire Goods— See Wire.		
Awl and Tool Sets— See Sets, Awl and Tool.	Bright Wire Goods— See Wire.		
Axes—	Bright Wire Goods— See Wire.		
Plain, Beveled, First quality, best brands, \$7.00 @ \$7.50	Bright Wire Goods— See Wire.		
First qual., other brands, \$6.62 @ \$6.70	Bright Wire Goods— See Wire.		
Second quality, 6.00 6.62	Bright Wire Goods— See Wire.		
Axle Grease— See Grease, Axle.	Bright Wire Goods— See Wire.		
Axes—	Bright Wire Goods— See Wire.		
No. 1, 4¢ 6¢, No. 2 5¢ 6¢ 6¢	Bright Wire Goods— See Wire.		
Nos. 7 to 14..... 55¢ 25¢	Bright Wire Goods— See Wire.		
Nos. 15 to 18..... 47¢ 5¢ 8¢ 10¢	Bright Wire Goods— See Wire.		
Nos. 19 to 22..... 70¢	Bright Wire Goods— See Wire.		
Concord Axes, loose collar..... 55¢ 25¢	Bright Wire Goods— See Wire.		
Concord Axes, solid collar..... 60¢ 25¢	Bright Wire Goods— See Wire.		
National Tubular Self-Oiling..... 33¢ 24¢ 33¢ 25¢	Bright Wire Goods— See Wire.		
Bag Holders— See Holders, Bag.	Bright Wire Goods— See Wire.		
Balances—	Bright Wire Goods— See Wire.		
Spring Balances..... No. 2000 20 30 30	Bright Wire Goods— See Wire.		
Chatillon, \$ dos, \$0.80 0.95 1.75 not	Bright Wire Goods— See Wire.		
Chatillon Straight Balances..... 40¢	Bright Wire Goods— See Wire.		
Chatillon Circular Balances..... 50¢ 10¢	Bright Wire Goods— See Wire.		
W.R.B.K. Flush, Com'n..... 55¢ 10¢	Bright Wire Goods— See Wire.		
Calipers— See Compasses.	Bright Wire Goods— See Wire.		
Catkins, Tee—	Bright Wire Goods— See Wire.		
Gauthier, One Prong, Blunt..... 55¢ 25¢	Bright Wire Goods— See Wire.		
Burke's, One Prong, Blunt..... 55¢ 25¢	Bright Wire Goods— See Wire.		
Burke's, Two Prong, Blunt..... 75¢ 25¢	Bright Wire Goods— See Wire.		
Burke's, Two Prong, Sharp..... 65¢ 25¢	Bright Wire Goods— See Wire.		
W.R.S. Sunk Flush, Sargent's list..... 55¢ 10¢	Bright Wire Goods— See Wire.		
W.R.S. Sunk Flush, Stanley's list..... 50¢ 10¢	Bright Wire Goods— See Wire.		
W.R.S. Sunk Flush, Com'n..... 55¢ 10¢	Bright Wire Goods— See Wire.		
Can Openers— See Openers, Can.	Bright Wire Goods— See Wire.		
Cards— List January 28, 1891.	Bright Wire Goods— See Wire.		
Watson's Cotton, Wool, Horse and File..... 20¢	Bright Wire Goods— See Wire.		
Carpet Stretchers— See Stretchers Carpet.	Bright Wire Goods— See Wire.		
Carpet Sweepers— See Sweepers Carpet.	Bright Wire Goods— See Wire.		
Cartridges—	Bright Wire Goods— See Wire.		
Fire Cartridges..... 50¢ 52¢ 5¢	Bright Wire Goods— See Wire.		
Fire Bit Military..... 15¢ 22¢ 5¢	Bright Wire Goods— See Wire.		
Fire, Pistol and Rifle..... 25¢ 52¢ 5¢	Bright Wire Goods— See Wire.		
Fire, Military and Sporting..... 15¢ 52¢ 5¢	Bright Wire Goods— See Wire.		
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.	Bright Wire Goods— See Wire.		
Blank Cartridges, 22 cal., \$1.75..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 33 cal., \$3.50..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 38 cal., \$8.50..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 42 cal., \$17.50..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 45 cal., \$35.00..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 50 cal., \$65.00..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 52 cal., \$85.00..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 55 cal., \$105.00..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 58 cal., \$125.00..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 60 cal., \$145.00..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 62 cal., \$165.00..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 65 cal., \$185.00..... 2¢	Bright Wire Goods— See Wire.		
Blank Cartridges, 68 cal., \$205.00..... 2¢	Bright Wire Goods— See Wire.		</td

Clamps—

R. I. Tool Co.'s Wrought Iron.....	26%
Adjustable, Cincinnati.....	16&10%
Adjustable, Hammers.....	16%
Adjustable, Stearn's.....	30&30&10%
Stern's Adjustable Cabinet and Cor-	ner.....
Cabinet, Sargent's.....	60&10%
Carriage Makers', Sargent's.....	24&10%
Carriage Makers', P. & W. Co. 40&10%	
Everbright Mfg. Co.	40&40&10%
Parallel, C. H. Besly & Co.	26%
Warner's.	40&10&40&10&25%
Saw Clamps, see Vises. Saw Flors'.	
Carpenters', Cincinnati.....	26&10%

Cleavers.

Butchers'.	25&30%
Bradley's.	25&30%
L. & J. J. White.	20&25%
Beatty's.	40&40&25%
New Haven Edge Tool Co.'s.	40%
P. & W.	33&25&33&25&10%
Foster Bros.	30%
Schulte, Lohoff & Co.	40&40&25%

Clips—

Norway, Axle, M & 5-16.....	55&55&55
2nd grade Norway Axle, M & 5-16 65&65	
Superior Axle Clips.....	60&65&70%
Worway Spring Bar Clips, 5-16.	60&65&65%
Wrightson's Felloe Clips.	55&55
Steel Felloe Clips.	55&55
Baker Axle Clips.	55&55

Cloth and Netting. Wire—See**Wire, &c.****Cockeves.****Cocks, Brass.****Hardware list.****Coffee Mills—See Mills, Coffee.****Collars, Dog, &c.**

Medford Fancy Goods Co.	40&10%
Embossed, Gilt, Pope & Steven's list	30&10%

Leather, Pope & Steven's list.**Brass, Pope & Steven's list.****Chapman Mfg. Company....****Combs, Curly.**

Fitch's.	50&10&50&10&10%
Rubber, per dos \$10.00.	20%
Perfect.	50%
Kellogg's.	50&10
Sweet & Clark's.	50&10

Compasses, Dividers, &c.

Compasses, Callipers, Dividers.	70&70&10%
Bennell & Call Co.'s	
Dividers.....	60&65
Compasses & Callipers.....	50&55
Wing and Inside or Outside.....	50&55
Double.....	60%
(Call's) Pat. Inside).	30%
Excisor.....	50%
J. Stevens & Co.'s.	25&10%
Starrett's	
Spring Calipers and Dividers....	25&10%
Lock Calipers and Dividers....	25%
Combination Dividers....	25%

Cooper's Tools—See Tools, Cooper's.**Cord—****Sash.**

Common.	7 D. 10@ 11c
Patent, good quality.	7 D. 12 @ 12c
White Cotton Braided, fair.	24@25
Common Russia Sash.	7 D. 12@12c
Patent Russia Sash.	7 D. 14c

Cable Laid Italian Sash.	7 D. 21@22c
India Cable Laid Sash.	7 D. 12c
Silver Lake—	
A Quality, White, 50c.	25%
A Quality, Drab, 50c.	25%
B Quality, White, 30c.	10%
B Quality, Drab, 35c.	10%
Sylvan Spring Extra Braided White, 34c	
Sylvan Spring, Extra Braided, Drab, 39c	
Semper Idem, Braided, White.	30c
Egyptian, India Hemp, Braided.	26c
Massachusetts, White.	26c

Sashes.

Braided, White Cotton, 50c.	30&30&5%
Braided, Drab Cotton, 55c.	34&30&5%
Braided, Italian Hemp, 55c.	30&30&5%
Braided, Linen, 80c.	30&30&25%
Turner's Cotton Braided, White.	28c

Wire Picture.**Braided or Twisted.****Corkscrews—See Screws, Cork.****Corn Knives and Cutters—See****Knives, Corn.****Crackers, Nut—**

Table (H. & B. Mfg. Co.)....	40%
Blake's Pattern.	\$2.00
Turner & Seymour Mfg. Co.	50%

Cradles—**Grain.****Crayons.****White Crayons, 4 gross.****D. M. Stewart Mfg. Co., Metal Work-****ers, 7 gr. \$2.50.****D. M. Stewart Mfg. Co., Rolling Mill,****7 gr. \$2.50.****See also Chalk.****Crow Bars—See Bars, Crow.****Curry Combs—See Combs, Curry.****Curtain Pins—See Pins, Curtain****Cutters—****Meat.****Dixon's 7 dos.****No. 1.****No. 2.****No. 3.****No. 4 and 00, Acme and Ideal. 50c****Steans'.****Gay & Parsons.****Champion.****Clark's Pat.****Crawford's Adjustable.****Allard's Spiral, new list.****Koll's Common Sense.****Syracuse Screw-Driver Bits.****Driver Bits.****Driver Bits.****P. D. & Co.'s all Steel.****Cincinnati.****Brace Screw Drivers.****Buck Bros. Screw-Driver Bits.****Egg Beaters.—See Beaters, Egg.****Egg Poachers.—See Poachers, Egg.****Electric Bell Sets.—See Bells, Elec-****tric.****Emery. — No. 4 to No. 54 to Flour, CF****40 gr. 150 gr. F. F. FF.****Kegs, 7 D. 44c. 6 44c. 23c.****1/2 Kegs, 7 D. 44c. 6 44c. 23c.****10-lb. cans, 10c.****In case.****10-lb. cans, less****than 10.****10c.****Home No. 1.****7 dos. \$26.00, 55&10%****THE IRON AGE.****349****Draw Cut, each:****Nos. 5 2 6 8****\$50 \$75 \$80 \$125.****Great American.****Beef Shavers' Enterprise.****Little Giant (P. S. & W. Co.).****Chadborn's Smoked Beef Cutter, 7 dos****42c.****Tobacco.****Champion.****Wood Bottom.****\$ dos. \$5.00-\$5.25****All Iron.****\$ dos. \$4.25****Nashua Lock Co.'s.****\$18.00 50c&55c****Wilson's.****55c****Sargent's.****\$ dos. \$94. 55c&10%****Acme.****\$ dos. \$20.00, 40%****Washer.****Smith's Pat.****\$ dos. \$12.00, 20&10&10%****Johnson's.****\$ dos. \$11.00, 33c&44c****Penny's.****\$ dos. \$16.00, 55c****Appleton's.****\$ dos. \$10.00, 60c&10%****Bonney's.****30c&10%****Cincinnati.****28c&10%****Damper, &c.—****Damper, Buffalo.****40&10%****Buffalo Damper Clips.****40&10%****Crown Damper.****40c****Excelsior.****40&10%****Diggers, Post Hole, &c.—****Samson Post Hole Digger.****\$ dos. \$30.00****Mackrell's.****\$ dos. \$30.00****Foster's.****\$ dos. \$30.00****Excisor.****\$ dos. \$30.00****Drill Bits.—****Blacksmiths'.****each \$1.75****Blacksmith's' Self-Feeding.****each \$7.50, 20c****Brent.****40&10%****Breast.****50c****Breast, Millers Falls.****each \$9.00, 25c****Breast.****each \$2.50****Breast.****each \$1.00****Breast.****each \$1.00**

August 27, 1891

Tinware—	
Stamped, Japanned and Pieced, list Jan. 20 1887.....	70@20@70@10@25
Tire Benders, Upsetters, &c.—	
See Benders and Upsetters, Tire.	
Tools.	
Coopers'—	
Bradley's.....	205
Barton's.....	30@40@45
L. & J. White.....	20@55
Abercrombie Mfg. Co.....	255
Beatty's.....	305
Sandusky Tool Co.....	30@30@45
Havens, Cincinnati Tool Co.....	205
<i>Lumber.</i>	
Ring Peavies, "Blue Line".....	20 doz \$20.00
Ring Peavies, Common.....	20 doz \$18.00
Steel Socket Peavies.....	20 doz \$21.00
Mail Iron Socket Peavies.....	20 doz \$19.00
Cant Hooks, "Blue Line".....	20 doz \$16.00
Cant Hooks, Common Finish.....	20 doz \$16.00
Cant Hooks, Mail, Socket Clasp, "Blue Line" Finish.....	20 doz \$16.00
Cant Hooks, Mail, Socket Clasp, Common Finish.....	20 doz \$14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....	20 doz \$14.00
Cant Hooks, Clip Clasp, Common Finish.....	20 doz \$12.00
Hand Spikes.....	20 doz \$8 ft., \$18.00; 8 ft., \$20.00
Pike Poles, Pike & Hook, # doz, 12 ft., 11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50	
Pike Poles, Pike only, # doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00	
Pike Poles, Pike not ironed, # doz, 12 ft., \$6.00; 14 ft., \$7.00; 16 ft., \$8.00; 18 ft., \$12.00; 20 ft., \$16.00	
Setting Poles, # doz, 12 ft., \$14.00; 14 ft., \$16.00; 16 ft., \$17.00	
Swarm Hooks.....	20 doz \$18.00
<i>Saw.</i>	
Atkins' Perfection.....	20 doz \$12.00
Atkins' Excelsior.....	20 doz \$8.00
Atkins' Giant.....	20 doz \$4.00
Tobacco Cutters—See Cutters, Tobacco.	
Transom Lifters—See Lifters, Transom.	
Traps—	
Game—	
Newhouse.....	40@40@25
Oneida Pattern.....	70@105
Garnet Black Patent.....	40@104@25
Mice and Ants—	
Mouse Wood, Choker, # doz holes, 11@12	
Mouse, Round Wire.....	20 doz \$15.00, 10%
Mouse, Cage, Wire.....	20 doz \$15.00, 10%
Mouse, Catch-em-alive.....	20 doz \$15.00, 15%
Mouse, Bonanza.....	# doz \$9.00@1.00
Rat Decoy.....	2 gr \$10.00, 10%
Ideal.....	2 gr \$10.00, 10%
Cyclone.....	2 gr \$5.25
Hatchkiss Metallic Mouse, 5-hole traps, # doz; in full cases, # doz, 75¢	
Hatchkiss Imp. Rat Killer.....	# gro \$12.50
Hatchkiss New Rat Killer.....	# gro \$16.50
Schuyler's Rat Killer.....	# gro \$15.00
Trivets—	
Butter and cheese.....	255
Trimmers, Spike.	
Bonney's.....	20 doz \$10.00, 50%
Stearns'.....	20 doz \$10.00, 50%
Ives', No. 1, \$15.00; No. 2, \$12.00	W. doz, 55@10%
Douglas'.....	20 doz \$9.00, 20%
Cincinnati.....	30@

Trewells—

Lothrop's Brick and Plastering.	
Reed's Brick and Plastering.....	155
Diston's Br'k and Plastering.....	255
Penos' Plastering.....	255
Clement & Maynard's.....	305
Rose's Br'k.....	15@20@25
Brade's Br'k.....	255
Worrall's Br'k and Plastering.....	205
Garden.....	70@

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....	
	405

Tubes, Bellier—

See Pipe.

Twine—

Flax Twine—	
BC. B.	
No. 9, 14 and 16 B. Balls.....	20@ 34@
No. 12, 14 and 16 B. Balls.....	25@ 33@
No. 18, 14 and 16 B. Balls.....	22@ 32@
No. 24, 14 and 16 B. Balls.....	22@ 32@
No. 36, 14 and 16 B. Balls.....	30@ 31@
No. 264, Matresses, 14 and 16 B. Balls.....	5@ 24@
Chalk Line, Cotton, 1/2 B. Balls.....	255
Mason Line, Linen, 1/2 B. Balls.....	55@
2-Ply Hemp, 1/2 and 1 B. Balls (Spring Twine).....	15@45
3-Ply Hemp, 1 1/2 B. Balls.....	16@21@16@
4-Ply Hemp, 1 1/2 B. Balls.....	16@21@15@
Cotton Wrapping, 5 Balls to 9.....	15@20@18@
Wool.....	6@4@6@4@
Paper.....	13@14@14@
Cotton Mops, 6, 8, 12 and 16 B. to doz. 18@	

Vines—

Solid Box.....	
	50@10@50@10@25@

Parallel—

Fisher & Norris Double Screw.....	
Stephens'.....	20@30@
Parker's.....	20@25@
Wilson's.....	55@
Howard's.....	40@
Bonney's.....	40@10@
Millers Falls.....	40@25@40@20@
Trenton.....	40@25@40@20@
Terrell's.....	15@20@25@
Stephens'.....	40@20@15@
Bucklin and Union.....	20@15@
Double Screw Leg.....	15@10@
Prestiss.....	20@25@
Simpson's Adjustable.....	40@
Moore's.....	30@
Massey Quick Action.....	20@ 25@

Saw Files—

Bonney's, Nos. 2 & 3, \$15.00.....	
Stephens'.....	33@4@10@32@4@10@21@
Garrison's Silent Saw Vises.....	33@4@32@5@
Sargent's.....	6@4@15@
Hopkins'.....	20 doz \$17.50, 10@
Wentworth.....	30@10@

Miscellaneous.

Combination Hand Vises, # gr \$42.00	
Cowell Hand Vises.....	30@
Bauer's Pipe Vises.....	10@
Cincinnat.....	35@10@
Enterprise Pipe Vises, each.....	\$5.00
Massey Combination Pipe.....	10@

Wads—Price per M.

J.M.C. & W. R. A. B. E., 11 up.....	
J.M.C. & W. R. A. B. E., 9@10.....	8@
J.M.C. & W. R. A. B. E., 8.....	9@
J.M.C. & W. R. A. B. E., 7.....	10@
J.M.C. & W. R. A. B. E., 6 up.....	11@
J.M.C. & W. R. A. B. E., 5@6.....	12@
J.M.C. & W. R. A. B. E., 4@5.....	13@
J.M.C. & W. R. A. B. E., 3@4.....	14@
J.M.C. & W. R. A. B. E., 2@3.....	15@
J.M.C. & W. R. A. B. E., 1.....	1.70
J.M.C. & W. R. A. B. E., 7.....	1.80
Troy's B. E., 11 up.....	\$1.70@ 1.75
Troy's P. E., 11@20.....	3.00@ 3.25

Paints and Colors.

Barytes, Foreign, # ton \$22.00 @24.00	
Barytes, Amer. Soated.....	30 doz \$32.00
Barytes, Amer. Soated, 30 doz.....	32 doz \$32.00
Barytes, Amer. No. 1.....	19.00 @20.00
Barytes, Amer. No. 2.....	13.00 @16.00
Barytes, Amer. No. 3.....	11.00 @12.00
Blue, Celestial.....	7 B. 6 @ 8
Blue, Chinese.....	50 B. 55
Blue, Prussian.....	25 B. 40
Blue, Ultramarine.....	8 B. 25
Brown, Spanish.....	3@ 2
Chalk, in bulk.....	4.20 B.
Chalk, in bulk, # ton.....	2.00
Chalk, in bbls., # ton B. 83 B. 40	18.00
China Clay, English.....	10 B. 13.00
Cobalt Oxide, pred'd.....	2.90 B.
Cobalt Oxide, black.....	lots 100 B. 3.60
Cobalt, Oxide, black.....	less 100 B. 2.65
Green, Paris, in bulk.....	14 B. 15.50
Green, Paris, in bulk, 175 B. 175 B.	18.00
Green, Paris, in bulk, 175 B. 175 B.	18.00
Green, Paris, in bulk, 175 B. 175 B.	18.00
Green, Chrome, ordinary.....	8 B. 11
Green, Chrome, pure.....	25 B. 25
Lead, Eng., B.R. white.....	8 B. 10
Lead, Amn. White, dry or in oil; Kegs, lots less than 500 B.	7 B.
Lead, Amn. White, dry or in oil; Kegs, lots 500 B. to 5 tons....	7 B.
Lead, Amn. White, dry or in oil; Kegs, lots 5 tons. to 12 tons....	6@45
Lead, Amn. White, dry or in oil; Kegs, lots 12 tons and over....	6@45
Lead, White, in oil, 25 B. tin pails add to keg price.....	10 B.
Lead, White, in oil, 1/2 B. tin pails, add to keg price.....	10 B.
Lead, White, in oil, 1/2 B. tin pails, add to keg price.....	10 B.

Mineral Oils.

Black, 25 gravity, 25 @ 30 cold test.....	
Cod, Domestic.....	7@8@ 8
Cod, Foreign.....	8@9@ 9
Red Elaine.....	36@38@ 38
Red Saponified.....	5 B. 5@5% 5@5%
Bank.....	29@ 29
Straits.....	30@ 30
Olive, Italian, bbls.....	62@ 65
Nestafoot, prime.....	55@ 65
Palm, prime, Lagos.....	6 B. 6@6%

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters, Washer.	

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enamelled, &c.	
Cast Iron, Hollow—	
Ground.....	60@10@10@
Unground.....	60@10@10@
White Enamelled Ware—	
Martin Kettles.....	70@10@20@25
Boilers and Saucepans.....	50@10@20@25
Tinned Boilers and Spans.....	50@10@20@25
Rustless Hollow Ware—	
Stove.....	50@10@10@
Martin Kettles.....	60@10@10@
Boilers and Saucepans.....	40@25@25@

Wares, Hollow, Enamelled, &c.

Cast Iron, Hollow—	
Ground.....	60@10@10@
Unground.....	60@10@10@
White Enamelled Ware—	
Agate and Granite Ware, list Jan. 1, 1889.....	33@10@10@
Ironclad Enamelled Ware.....	dis 33@10@
Kettles—	
Galvanized Tea-Kettles—	
Inch.....	6 7 8 9
2-Ply.....	5@ 6@ 6@ 7@
Standard Kettles—	

Standard Fiber—

Per Dosen.	
Plain, Dec'd.	\$2.25
Wash-Basins, 10 1/2 in.....	\$2.00
Wash-Basins, 12 in.....	2.25
Keelers, 11 1/2 in.....	4.00
Cupidors	

